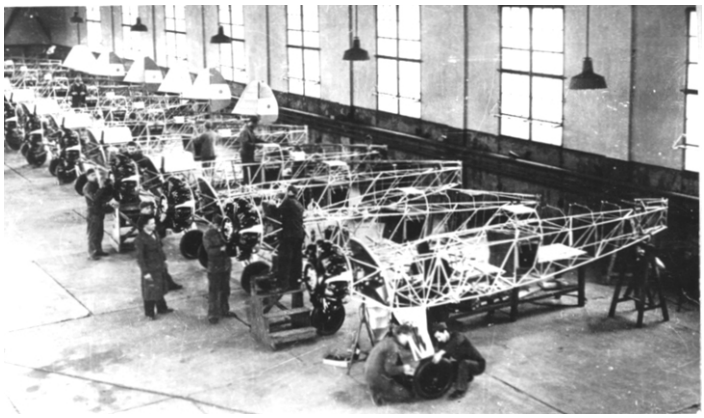
# small air forces observer

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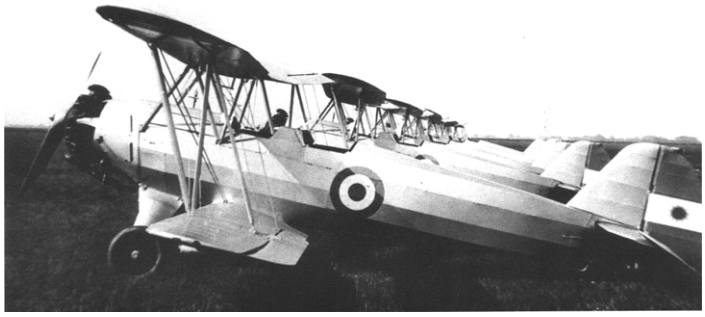
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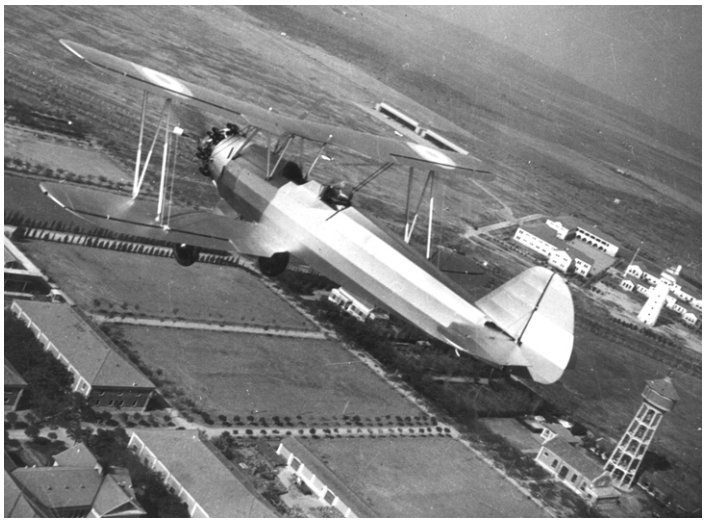

**NKPAF “Group Z” in the Vietnam War**
**Northrop F-5 Abroad (Part 1)**
**Argentine Fw 44J Stieglitz**
**Gonney Birds: Mali**
**Exotic Birds #5**



Production line of the Fw-44J at the Fábrica Militar de Aviones in Córdoba. Archive Santiago Rivas.



A line of Fw-44J ready for delivery to the Argentine Army Aviation. Archive Santiago Rivas.



A factory fresh Fw-44J flies over the Fábrica Militar de Aviones, with the Escuela Militar de Aviación, in the background. The plane still hasn't any serial applied. Archive Santiago Rivas.



Ee.104 after 1945. The plane was stored for some years before being put into service and it saw only three years of service. Archive Santiago Rivas.




Fw-44J c/n 04 with serial 24 at the Escuela de Aviación Militar in the late 30's or early 40's. This is a mystery, as the 04 was assigned the serial 14. Archive Francisco Halbritter.



Fw-44J serialled 21 during its early days of service. Archive Santiago Rivas.

Argentine Fw 44J Stieglitz. See article beginning on page 77.

# SMALL AIR FORCES OBSERVER

The Journal of the Small Air Forces Clearinghouse
E-Mail: safo@redshift.com

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**The Sydney Award.** This is a quarterly award given to a member who has consistently provided excellent articles for publication in SAFO. The awards consists of a one-year subscription to SAFO and is funded from the Richard E. Cross and Naidene Denton Cross Memorial Fund. The honoree this quarter is Frits Gerdessen (SAFCH #12) of the Netherlands who has authored numerous SAFO articles on early Dutch military aviation. Congratulations Frits.

**COVER COMMENTS**:
Argentine Fw 44J 1-I-3 (I1Av.N-161) of the Museu Asas de Um Sonho in 2012, after its restoration. The plane is the former LV-ZAS from Argentina and received, on the right side, the colours of the Brazilian Naval Aviation, while on the left side is with civil German colours and serial D-2692. Photo Museu da TAM via Aparecido Camazano Alamino.

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## AUSTRIA

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**4/15** (48 pages) "Östrreicher in der Deutschen Luftwaffe: RK-Träger Major Rudolf Mons" 3 pages inc. 6 photo (Austrian Ca 133 & Ju 52).

## FRANCE

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**Agusto 2015** (100 pages) Color photos: Byelorussian Yak-130. "Aviación Policial Colombiana" 6 pages inc. 17 photos (DC-3, UH-60L Blackhawk, Cessna TU206G, Bell 407, ATR 42-300, DHC-6 Twin Otter, Beech 19000,Air Tractor AT-802, Piper PA-31-350 Chieftain, Bell 412EP, & Bell UH-1H Huey II).

**Settembre 2015** (100 pages) Color photos: Finland NH90. "Dassault Rafale consegnato all'Egitto" one page inc. one photo. "In volo col 51$^{o}$ Stormo" 8 pages on Italian AMX inc. 7 photos. "Fuerza Aérea Boliviana" 7 pages inc. 15 photos ( T-33, Beech T-34, DA40C, Bell UH-1H, Hongdu K-8VB, Pilatus PC-7A, EC145, Fokker F-27, Beech 300C, Beech King Air, C-130B, NA AT-6D, Dassault Falcon 900EX, Harbin Z-9). "MiG-31BM" 6 pages in. 12 photos (one Kazakhstan). "Whitehead flew … or dudn't he?" 4 pages on reconstruction inc. 8 photos. "Cartolina dal Pakistan" 2 pages w/ 8 photos (C-130, Embraer 100, Cessna Caravan, Harbin Y-12, CASA CN-235, Il-78MK, An-12, & F-104). "Incidti Militari: one page inc. 4 photos (Russian An-12K &Greece CL-215).

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# Argentine Fw 44J Stieglitz

Santiago Rivas

*More than 200 examples of the Focke Wulf Fw-44J Stieglitz were built under license in Argentina. These served to train pilots for military and civil service many of whom became famous for their aerobatic displays using the Stieglitz.*

On 7 April 1936, the need for the Argentine military to replace its old Avro Gosport trainers resulted an international tender for the purchase of 20 basic trainers and 30 advanced trainers. The final contenders, the Bücker Bü-131 Jungmann and the Focke Wulf Fw-44J Stieglitz,. were extensively tested by the Escuela de Aviación Militar at El Palomar, near Buenos Aires, and by the Fábrica Militar de Aviones (FMA) at Córdoba. The Fw-44J was declared the winner and an order for twenty Fw-44Js, including the demonstrator, D-ENOY, was placed in mid 1937.

Initially, on 26 August 1936, D-ENOY was registered R-321 in the old Argentine civil registry. When the registration system was changed in January 1938 it was re-serialled LV-NDA. This airplane was stored after the tests and was officially transferred from Focke Wulf Fluzeugbau AG to the Argentine Army Aviation and was given the serial 1.

After the negotiations ended, it was agreed that the first ten Fw-44Js would be completely built in Germany, while the second batch of ten would be assembled by FMA using parts provided by Focke Wulf and some locally-built parts. In addition, a license was acquired to produce the Stiegltz for both military and civilian use. An order was made for ninety Siemens Halske Sh-14a engines of 150hp, instruments, wooden parts for the wings, and the steel tubes for the fuselage to assemble seventy airplanes, bringing the total to ninety. However, the plan was to ultimately obtain a total of 500 examples, something that became impossible when the supply of parts was restricted because of the war in Europe.

The demonstration aircraft, together with the first three Fw-44Js from the first batch of ten, were officially handed over to the Escuela de Aviación Militar on 9 July 1937, Argentine Independence Day. The Fw-44J serialled 2 was allocated the serial LV-NDB in 1938, but this was never used. During July, three other Fw-44Js were delivered, followed by eight more in August and the remaining of the first twenty were handed over in September. The first ten Fw-44Js had Focke Wulf construction number, while from the eleventh Fw-44J on they had FMA construction number, starting from 1.

**Local production**

On 5 October 1937, the steamer *Westerwald* arrived in Buenos Aires' harbor with the wooden parts necessary to start the assembly of the first locally-built aircraft. These parts arrived at the FMA in Córdoba two weeks later. On 11 October, the steamer *Cap Norte* arrived with the remaining parts. Once the material was approved by the FMA laboratories, assembly of the first Fw-44J started on 5 October. This airplane was ready within 34 days. It was fitted with the first metal propeller built in Latin America. An initial batch of ten metal and 50 wooden propellers was built.

Finally, on 16 December, the first Fw-44J claimed as built by the FMA (in fact most of the airplane was built in Germany, but assembled locally), made its first flight, commanded by Sergeant Santiago Germanó, who would later become famous flying the Fw-44J on aerobatic displays. This Fw-44J received the serial 21 and construction number 11.

Deliveries continued through 1938, with increase use of locally built parts. Ten were delivered to the Escuela de Aviación Militar, replacing the old Avro Gosports. The first Fw-44J was used by the FMA for tests. Twenty Fw-44Js were delivered to the Dirección General de Aeronáutica Civil (DGAC), an organization controlled by Army Aviation, but dedicated to promoting civil aviation by delivering Fw-44Js to the aero clubs. The first six of these received serials R-95 to R-100, in the old registry, but all received new serials from 1938, being LV-OCC, PCC, QCC, RCC, SCC, TCC, UCC, VCC, WCC, XCC, ZCC, ADC, BDC, CDC, DDC, EDC, FDC, GDC, and HDC. The first ten civil Fw-44Js were delivered in August and the others in December.

The Fw-44J proved a very reliable and robust airplane and very few accidents occurred despite being used by inexperienced cadets. The first fatal accident occurred on 17 August 1938, when Sub Lt. Ángel Hernández and Sargento Ayudante Martín Mongragón were killed when Fw-44J serialled 29 crashed at Córdoba.

In 1939, deliveries continued until finishing the series of 90 Fw-44Js delivered (20 built in Germany and 70 partly built in Argentina). Of these, the Fw-44Js 67 and 68 were donated to Brazilian Army Aviation in exchange for two Muniz M-9s.

Because of the war in Europe, Siemens informed the Argentine authorities that they were not able to deliver any more engines. As an experiment, the Fw-44J with construction number 52 (with serial 62 allocated, but never used) was built with an 140hp Argus As 8B four cylinder inline engine. Later, it was also tested with a de Havilland Gipsy Major II, engine and exhibited with it from 19 October to 11 November 1940 at a fair in Buenos Aires. It was retired in early 1943.

Another modified Fw-44J was serial 51 (c/n 41) which became a single seater for use by the famous local female pilot Carola Lorenzini for a tour of the fourteen Argentine provinces (then the country had 14 provinces and nine National Territories, later converted into provinces). She had the front seat replaced by an extra fuel tank.

Since the needs of Army Aviation were covered, thirteen Fw-44Js built in 1938 were delivered to aero clubs, together with the remaining 26 Fw-44Js built during 1939.

Of the 36 Fw-44Js in service with the Army, seven (26, 27, 28, 41, 53, 54, and 55) were delivered to Grupo 1 de Observación at BAM General Urquiza in Paraná, while 26 remained at the Escuela de Aviación Militar, by then moved to Córdoba. Four Fw-44Js were delivered to the Escuela de Mecánica del Ejército for ground training and never flew again.

**Production problems**

In 1940, the problem obtaining Siemens engines for the license-built Fw-44J became urgent. Therefore, a license to produce the Siemens Sh14 was obtained from Germany. In addition, steel parts for one hundred more Fw-44Js was obtained. Meanwhile, five engines were obtained from Germany and, using locally built parts and some that still could be obtained from Germany, it was possible to deliver five more Fw-44Js during 1940, all to the Dirección General de Aeronáutica Civil (DGAC).

The first locally built Siemens engine, called I Ae Sh14, was successfully tested on 2 October 1940. This lead to a series of 50 built locally. Also, fifty Warner Super Scarab of 145hp were purchased in the United States, but further attempts to buy more of them were vetoed by the US government, which was not happy with the Argentine neutrality in the war.

During 1940, the first ten Fw-44Js delivered to civil operators were returned to the Army and sent to the Escuela de Aviación Militar. Also, LV-IDC, despite its civil serial, remained at the military school.

On 23 November 1941, Carola Lorenzini was killed when she crashed LV-DDC (c/n 46) while performing an inverted loop at Morón aerodrome. The cause was determined that it was the first time she had flown that particular Fw-44J while performing a very dangerous maneuver.

The problems of obtaining parts stopped the production, but it was resumed in 1942, when on 22 September, Fw-44Js 96 and 97 were delivered to the Escuela de Aviación Militar. These were followed by another 62 Fw-44Js, all for Army Aviation. However, Army Aviation did not need to operate all of them. so most were put into storage. Also, LV-HEC, IEC, JEC, KEC and LEC were returned to the Army in 1942. The first two were delivered to the aviation school and the other three to the Agrupación Entrenamiento at El Palomar, in charge of the advanced training of the pilots. This last unit also received the Fw-44Js 141-150. Fw-44Js 151-154, the last delivered that year, were destined for Grupo 1 de Observación. The remaining 46 Fw-44Js were almost ready at the factory, but problems of getting parts and the fact that they were not needed, delayed their completion.

Production of Fw-44J was reduced in 1943 since the factory was now fully involved in the development of the I.Ae. DL 22 advanced trainer. Only Fw-44Js from 155-168 were delivered during the year, the first five to BAM El Plumerillo, at Mendoza, 161-165 to the Escuela de Pilotos Militares as reserve, and the final three to the Grupo 1 de Observación.

By November of that year, the Agrupación Entrenamiento had 18 Fw-44Js, fifteen were at FMA, 20 at the Grupo 1 de Observación, 13 at the Regimiento 3 de Ataque, 45 at the Escuela de Pilotos

Militares, 38 with the Colegio Militar de Aviación, one at the Escuela de Mecánica del Ejército, and one assigned to Carola Lorenzini, which was still at Aeroclub Coronel Suárez.

Finally, deliveries of Fw-44Js 169-190 took place during 1944. Fw-44Js 169-171 going to the Grupo 1 de Observación. (171 was later delivered to the Navy.) Fw-44Js 178-180 went to the Dirección General de Material Aeronáutico, which received all new equipment, as they had no unit assigned. The 181-188 and 190 were sent to the Regimiento 3 de Ataque at BAM El Plumerillo, while the 189 went to the Agrupación Entrenamiento.

On 26 August 1944, by Orden Reservada No.15, the serials of military airplanes received letters to identify their use. This was to avoid confusion, as many types of airplanes within the force had the same numbers. Since the Focke Wulfs, were destined for elementary school, they received prefix Ee- (Escuela Elemental) before their number, so their serials were now from Ee-01 to Ee-190.

In late 1944, it was decided to transfer 46 Fw-44Js from Military Aviation to the aero clubs, but only 30 were transferred and five (LV-MEC, NEC, OEC, PEC and QEC) were returned from the DGAC to the Air Force. Most of the Fw-44Js delivered by the Air Force were from the Escuela de Pilotos Militares, because it was dissolved at the end of 1944.

**The Fuerza Aérea Argentina**

In January 1945, the Ministerio de Aeronáutica was created from Army Aviation and all their airplanes and units were transferred to the new force, the Fuerza Aérea Argentina.

In 1945, to supplement their aging Curtiss Hawk III and 75-O, the Regimiento 2 de Caza, at BAM El Palomar, received three Fw-44Js (Ee-186 to Ee-188). Ee-168 became the first airplane assigned to the Destacamento Aeronáutico Militar (DAM) Tandil, Buenos Aires province, a new base created to house the Regimiento 6 de Caza Interceptora that would soon be equipped with Gloster Meteors.

When the DGAC purchased 130 Miles Magisters, 40 Taylorcraft, 110 Piper J-3C, two hundred Piper PA-11 and one hundred PA-12 in 1947, the Fw-44Js were relegated to the aero clubs and 21 were returned to the Air Force but three from the later were transferred back to the DGAC.

**Last constructions**

Before 1945, Ee-30, Ee-48, LV-TDC. LV-IEC, and LV-WDC had suffered accidents and were completely rebuilt. With this experience, it was decided to use the extra airframes that had been delivered from Germany before the war but that weren't finished, to complete them. Fw-44Js Ee-29, Ee-39, Ee-63, Ee-148, Ee-178, LV-TCC, LV-FDC, LV-XCP, and Ee-182 were rebuilt, while a small series was completely new built. Ee-29 and Ee-39 were delivered to the Military Aviation School, Ee-148 was delivered to the civil aviation as LV-XCR, Ee-178 went to DAM Tandil, while Ee-182 was the last to be rebuilt, with works being completed in the early fifties.

On all the rebuilt examples, the former c/n was retained, despite in most cases none of the former Fw-44J's parts were used. In total, 13 Fw-44Js were rebuilt during the forties and early fifties.

The new series comprised ten Fw-44Js (Ee-191 to Ee-198 and Ee-67 and EE-68). The latter two were a repetition of the serials given to the Fw-44Js exported to Brazil. The constructor number of these last two Fw-44Js is unknown. (A curious thing is that all these are listed as received on 10 November 1937, which seems to be the date the fuselages were built. Ee-67 and 68 are marked on the papers of the Air Force as enlisted on 2 October 1939, when the batch of airplanes that included the Brazilian examples was delivered.)

During 1948, it was decided to distribute some of the military Fw-44Js to front line Regiments for training and liaison duties. Ee-143, Ee-159, and Ee-162 were sent to Regimiento 1 de Bombardeo at BAM Coronel Pringles, Ee-117, Ee-122, Ee-128, and Ee-139 to Centro de Tiro y Bombardeo La Rioja, at Chamical, and Ee-153 and 155 to DAM Tandil.

In 1949, the Air Force purchased one hundred Percival Prentice to replace the Fw-44J. The Fw-44J were still in very good conditions, but they were not the best to train military pilots who would be flying monoplanes. By the end of 1949, fifty-one Fw-44J were retired, of which 40 were sent to the DGAC.

In 1950, only four, Ee-22, 24, 107, and 110) continued in service with Army Aviation, all with the Centro de Tiro y Bombardeo La Rioja. However, the force still had seven in its inventory and some forty-four more were retired but still stored. About 20 of these were transferred to the civil aviation in 1951.

In 1952, all remaining Air Force Fw-44Js were grounded. However, shortly after, two including Ee-136 were put back in service and sent to the Escuela de Tropas Aerotransportadas for liaison duties. This Fw-44J remained as the sole Fw-44J with the Air Force when all the others were retired in 1955. Meanwhile, the government still had 24 Fw-44J distributed in aero clubs. Many others were handed over to the aoro clubs, while some were sold to private owners.

On August 1955 the LV-YZM of Santiago Germanó was shipped to the UK, where it was downloaded at Tilbury on 19 August and taken to Coventry to take part in the Lockheed International Aerobatic Competition at the British National Air Races in Bagington on 20 August. However, it was eliminated from the competition because it took more time than allowed to perform all the required aerobatic maneuvers.

LV-YZM returned to Argentina, but was badly damaged on 20 June 1960 during an aerobatics demonstration at Aero Club San Rafael in Mendoza province.

In 1956, the last nine of the last ten Fw-44J with the Air Force were scrapped and their fuselages were used to build tables. The tenth, Ee-136, continued in service at least until 1961, when it was reported to have had a minor accident.

In the civil sector, many Fw-44J continued flying throughout the fifties and sixties, with about ten still surviving into the seventies. At least one was tested for crop spraying.

**Today**

In November of 1979, the Air Force acquired the former Ee-182, which had served with the Centro Universitario de Aviación as LV-FIC. With serial E-100 it was flown from Buenos Aires to Córdoba in the hands of José Zurueta. In 1982 it was allocated serial PG-396, destined to the Escuela Militar de Aviación, making the first flight on 10 August 1982 at the hands of Major Villareal, who continued flying it until 28 November 1985 when the plane was grounded. Despite this, it was taxied on many opportunities. After being stored there for about ten years, it was finally delivered to the National Aeronautics Museum in 2001, where it is today with fake serial Ee-122.

Another Fw-44J, former serial Ee-184, which had flown as LV-ZBN for many years, was recovered and restored, being donated on 27 June 1985 to the Brazilian Museu Aeroespacial, as there were no Fw-44J survivors in Brazil.

Currently, the LV-YZN and the LV-YYU are the last examples flying in Argentina, although there are parts of many others in the country. LV-YZN was rebuilt after an accident in 1962, when it was almost completely destroyed. It's the last Fw-44J rebuilt. Another Argentine example, former LV-ZAS, was exported to Brazil in 2001, to be exhibited at the Museu Asas de um Sonho of TAM airline painted one half with Brazilian Naval Aviation livery and the other half on civil German colors of the thirties.

Other Argentine Fw-44J exported include:

LV-YZP exported to Spain and now with the Fundación Infante de Orléans as EC-JSE.

LV-ZAV was exported to Germany and restored with serial D-EMUT, now flying in Frankfurt.

LV-ZAU was exported to the USA and is now exhibited with Luftwaffe colors at the Fantasy of Flight Museum in Florida.

LV-YYK was exported to Germany as D-ENDH, later sold as OO-JKT and later G-STIG, until ending in Virginia Beach, Virginia, as N-183FW.

Ee-178 is now privately owned in Germany with serial D-ETUF.

**The FMA I.Ae.23**

Because the war made it difficult to get parts from Germany to extend the production beyond the initial 190 Fw-44Js delivered during 1942, the Instituto Aerotécnico the design office of the Fábrica Militar de Aviones developed a version of the Fw-44J with a monocoque fuselage completely made of local wood, instead of tubes and fabric, and locally built metal pieces. The prototype I.Ae.23, powered by a license-built Sh-14 engine, was finished by mid 1945. It had a blue livery with no serial despite the fact that serial Ee-0 had been allocated. On 7 July, the I.Ae.23 made its first flight at the hands of Santiago Germanó.

Tests of the model were successful, but by the time it was ready for production, the Instituto Aerotécnico wasn't interested as the Argentine Air Force was now looking for a new basic trainer and there were too many Fw-44J in storage. After flying only 74:50 hours, the airplane was transferred to the Comando de Institutos Aeronáuticos Militares on 16

April 1947 for ground training. It was officially retired on 27 January 1948.

**With the Navy**

In 1944, Argentine Naval Aviation training consisted of Curtiss Wright 16E.3 Kelito and Stearman 76D-1. To increase its training capacity, the Navy decided to order thirty FMA-built Focke Wulf Fw-44J to be delivered during 1945. But due to the lack of some parts caused by the war, the FMA informed the Navy it couldn't deliver these aircraft. However, the Army said they could deliver six examples from their inventory. When the Navy personnel came to ferry the airplanes to Comandante Espora Naval Aviation Base, they rejected the Fw-44Js as they were in very bad conditions.

To save the situation, the Air Force offered to deliver seven examples from their latest batch. These were construction numbers 161- 167, having received the Army aviation serials Ee-171 to Ee-177. However, only the first had been delivered to the Army and assigned to the Grupo 1 de Observación, where it had made a forced landing at Paraná on 15 June 1944. The plan also included the delivery of the remaining Fw-44Js from the factory, to be delivered to the Navy by 1945. But by then, the Navy was offered a batch of Stearman N2S / PT-17 Kaydet in very good conditions and at a very low price, so they finally decided to end the plan to receive more Fw-44Js.

Meanwhile, by mid 1944, all seven Army Fw-44Js were delivered to the Navy. The other six were deliverd directly from the factory. Three were destined for the Escuela de Aviación Naval at Comandante Espora Naval Aviation Base, near the city of Bahía Blanca and very close to Puerto Belgrano Naval Base, which is the main base of the Navy.

The Navy Fw-44J formed an escadrille to train new pilots on aerobatics, while the basic training was provided by the Curtiss CW-16E Kelitos, with the pilots later going to the Stearmans for advanced training. After the Focke Wulf, the new pilots went on to learn instrumental flight with the Junkers W34, two Stinson Reliants and one Waco C. The Fw-44J received the serials 1-E-20 to 1-E-22.

The other four Navy Fw-4J (serials 3-Gc-4 to 3-Gc-7) were assigned to the Coast Guard and liaison duties with the Fuerza Aeronaval of the Zona Naval del Plata, together with two Fairchild 45s and one Waco C.

On 23 February 1945, the three Fw-44Js of the Escuela de Aviación Naval were serials 1-E-16 to 1-E-18, while the other four were sent to the Escuela Naval Militar Flight Department, with three of them in service and the other in reserve.

On 31 December 1946, they were all gathered at the 1º Escuadrilla of the Escuela de Aviación Naval, as the force was organized with seven escadrilles, having 125 training airplanes and four transports. The planes received serials 1-E-1 (ex 1-E-16), 1-E-2 (ex 3-Gc-4), 1-E-3 (ex 3-Gc-5), 1-E-4 (ex 1-E-17), 1-E-5 (ex 3-Gc-6), 1-E-6 (ex 3-Gc-7) and 1-E-7 (ex 1-E-18). Shortly after, by the beginning of 1947, a new serial system was established, in use until today, and the Fw-44Js received the serials 0095/1-E-1 to 0101/1-E-7.

The life of the Stieglitz with the Navy was short, as from 1947 began to arrive a big quantity of trainers from the US stocks, including sixty Stearman PT-17 Kaydet, 29 Vultee Valiants and more than one hundred Texans, leading to the replacement of the older models, so during the year, the seven Fw-44Js were retired from service. The 0099 and 0100 were delivered in 1950 to the DGAC and received the civil serials LV-YZE and YZY respectively, both were destroyed on accidents in 1952. The other five Fw-44Js were scrapped.

Santiago Rivas (#1739), Brazil.

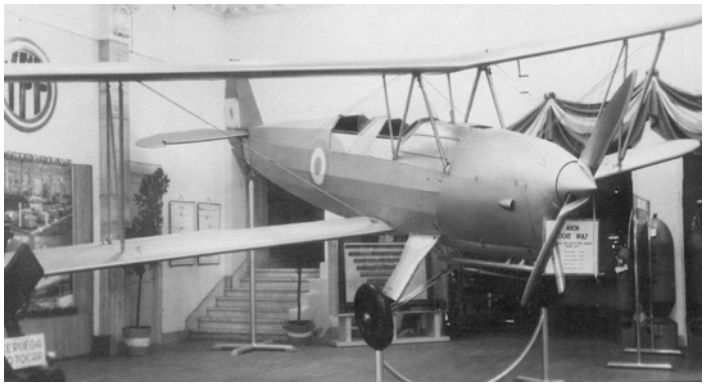
Photos begin on page 74 and continue on pages 82.




Fw-44J R321 with Sergeant Santiago Germanó. He performed the first flight of a locally assembled Fw-44J and later became famous performing aerobatics with the model. This plane was the German demonstrator, which performed a Latin American tour with serial D-ENOY. It was tested in Argentina receiving the local serial R-321, and in 1938 it was re-serialled LV-NDA. Shortly after that it was purchased by the Army and received the serial 1 and later Ee-1. Archive Santiago Germanó.



Aircraft c/n 52 was built with an Argus As 8B inline engine instead of the Siemens Halske Sh-14a one. It was called Focke Wulf con motor lineal. Photo Fábrica Militar de Aviones.



Focke Wulf con motor lineal was later tested with a Gipsy Major II engine, as seen in the picture. It was retired in 1943. Archive Fernando Benedetto.



The FMA I.Ae.23 was a locally built Fw-44 in which the fuselage was completely built of local wood. The plane received serial 0 and was tested from 1944 to 1947, after which it was used for ground training until 1948. Photo Fábrica Militar de Aviones.



The plane with c/n 41 was modified as a single seater, with an extra fuel tank, for use by pilot Carola Lorenzini on his flight across Argentina's fourteen provinces in existence in 1940. She also used it for a trip to Brazil in 1941. After that the plane was reverted to its two-seat configuration. In the photo Lorenzini is seen on board her plane. She was killed on 23 November 1941 while flying LV-DDC. Archive Santiago Rivas.



LV-ZAS after 1953. The plane was the former Ee-159. It was exported to Brazil in 2000 and is currently at the Museu Asas de um Sonho. Archive Santiago Rivas.

Photos continue on pages 107.

# KPAF "Group Z" in the Vietnam War

Douglas Dildy

*"Fight in the Vietnamese skies as if they are your own."*
Kim Il Sung, pre-departure speech to Group Z pilots, December 1966

One of the least known aspects of the air war over North Vietnam (NVN) was that the KPAF participated by supplying a regiment of "volunteers" flying MiG-17s and MiG-21s to help defend that Communist country from air attacks by USAF and USN fighter-bombers during the fabled (but fatally flawed) "Operation Rolling Thunder". Although US Intelligence services were aware of this unit as early as December 1966, publicly the North Koreans' participation in the Vietnam War was largely unknown for 35 years and, until very recently, it was not mentioned in any VPAF (Vietnam People's Air Force) history that was written in, or has been translated into, English. The KPAF's contribution came to light through a series of articles published in various newspapers and articles, one VPAF pilot memoir, and some BBC broadcasts during 2000-2008. This mysterious and enigmatic KPAF unit has been the subject of investigation by private researcher and Vietnam War historian Guy C. Bentz, who contributed information for this article.

Additionally, most recently "Doan Z" (Vietnamese for "Group Z") has been included as a full chapter in István Toperczer's excellent Silver Swallows and Blue Bandits, the definitive English-language history of the VPAF in the Vietnam War. This article will provide a balance to the latter by checking Toperczer's information against USAF and USN data contained in the previously classified "Red Baron Reports", a series of in-depth studies and assessments of all American aerial encounters with VPAF aircraft from April 1965 through October 1967.

To place the KPAF's participation in the Vietnam War into context, the VPAF was established 25 January 1959. Initially, it was a training (910th Training Regiment) and transport (919th Air Transport Regiment) organization, but the next year 52 student pilots were sent to the USSR to attend a five-year program that included pilot training, fighter training and MiG-17 qualification.

The VPAF's first fighter unit was the 921st "Sao Dao" ("Red Star") Fighter Regiment, established 3 February 1965 with the arrival of the first Soviet-trained pilots at Noi Bái AB (aka Phúc Yên), using 36 non-afterburning MiG-17 "Fresco-As" and four MiG-15UTI trainers. While eight MiG-17s sat air defense alert at Noi Bái, the rest of the unit's two squadrons deployed to Son Dong AB in southern China for operational and combat training. Despite sporadic successes, the "alert detachment" suffered heavy casualties against the more experienced American aviators and their more powerful and sophisticated fighters/fighter-bombers, requiring pilots and MiGs to be recalled from Son Dong to replace losses. Finally, the situation became so bad that the whole regiment was recalled for combat operations on 6 August 1965. By the end of that month the VPAF had lost 14 MiG-17s destroyed and ten pilots killed – with another six shot down and killed in October.

In August, the regiment was also reinforced with 12 MiG-21PFL "Fishbed-Ds", forming a third squadron by transferring nine of the regiment's remaining pilots, only three of whom were qualified on the MiG-21, so a long, local training program was begun. Meanwhile, a second group of some 31 fighter pilot trainees that were undergoing a three-year MiG-17 training program at Son Dong were recalled to their homeland. These pilots formed the 923rd "Yên Thê" ("Hill of the Peaceful Site") Fighter Regiment, established at Kep AB on 7 September 1965, receiving 30 of the more powerful MiG-17F "Fresco-Cs" from the USSR. Although the fledgling fighter force's successes were noteworthy, losses were high – another 22 MiGs destroyed and 14 pilots killed in 1966 – the loss rate easily exceeding the Soviet and Chinese training graduation rates. Consequently the North Koreans asked if they could help.

According to independent researcher Guy C. Bentz, "Even scaling back the courses to three years, the Vietnamese realized that based on the pilot attrition incurred during the initial air combats, the

pilot training output would not keep up with their losses and allow the expansion of further aviation regiments as planned. As a stop-gap measure, they accepted the assistance of the North Koreans. The North Koreans began sending their initial ground cadre in 1965, and (according to Vietnamese sources) pilots began arriving in 1966. The North Koreans flew area familiarization out of Phuc Yen, avoiding combat until early 1967. From January through April 1967, the North Koreans began transferring their MiGs from Phuc Yen to Kep and were placed under the control of the North Vietnamese 923rd Air Regiment. They initially fielded two squadrons of MiG-17s, and later added a third squadron flying MiG-21s. The North Vietnamese referred to [them] as 'Group Z'; their MiGs all carried North Vietnamese insignia."

**KPAF "Doan Z"**

According to Toperczer's account, VPAF records show that the Vietnamese Communist Party Central Military Committee officially accepted Kim Il Sung's offer on 21 September 1966 and the details were agreed to by the two nations' military chiefs of staffs by the end of that month. The North Koreans would wear VPAF uniforms and flight suits and fly VPAF aircraft – no KPAF MiGs were shipped to NVN. The 113-man regiment, commanded by Lieutenant Colonel (Lt Col) Kim Chang Xon, operated under the Vietnamese Air Defense and Air Force Command, with that headquarters (HQ – known as the "Chief Command") assigning the unit's combat tasks. Eventually, over the next two years some 800 KPAF personnel, including 70 pilots, are reported to have rotated through the unit on a "temporary duty" basis.

After flying a reported 58 training sorties, "Doan Z's" first combat mission occurred on 10 March 1967, the day the USAF's Thirteenth Air Force launched a massive strike against the Thai Nguyen Iron and Steel Complex, 35 miles north of Hanoi. The raiders attacked in two waves with the 388th TFW hitting the target first. As the American fighter-bombers hit their target, two four-aircraft flights from "Group Z" were scrambled from Kep to orbit west of the target at 500m (1,640ft), positioned to intercept the second wave of American fighter-bombers as they recovered from their dives.

About that time, sixteen 355th TFW Republic F-105D Thunderchiefs (called "Thuds") arrived, escorted by four bomb-carrying McDonnell F-4C Phantom IIs and accompanied by four F-105 "Wild Weasels" for SAM suppression. Commanding this attack was Lt Col Philip C. Gast (354th TFS commander) who led the "Iron Hand" AAA-suppression flight and, as his four-ship pulled out of their dive-bombing runs at 4,500ft, he spotted two four-ships of MiG-17Fs in echelon formation at two o'clock low, two miles away. Gast and his wingman, Captain (Capt) Max C. Brestel, immediately jumped the trailing four-ship, Gast shooting (ineffectively) at the lead element while Brestel attacked the second two-ship. Firing from 500-1,000 feet behind the number four MiG-17F, Brestel saw "hits in the left wing, fuselage and canopy, also a fire in the left wing root. The aircraft rolled over and hit the ground under my left wing." Korean pilot Kim Quang Wook was killed in the crash. As the engagement continued, Brestel also damaged the number three MiG-17F, which was shooting at Gast. USAF Intelligence subsequently reported that the damaged MiG crashed during recovery to Kep, so Brestel was awarded two confirmed victories. (RBI/III-89)

Two more KPAF pilots were killed during the first three weeks in April: Kim Yun Hoan on 10 April and Tsa Sun He on the 21st. These two pilots appear to have died in training accidents because, according to USAF/USN records there were no MiG encounters on 10 April, and on the 21st the only encounter was a "sighting" of two MiG-17s by four Thunderchiefs – no engagement ensued. (RBI/III-123 and 125)

Three days later "Doan Z" claimed its first victory. Two dozen USN aircraft attacked Kep and Hoa Lac airfields, covered by six F-4B Phantoms. "Chief Command" scrambled two VPAF four-ships followed by a flight of Korean-flown MiG-17PFs. The Vietnamese flights engaged two F-4B sections (two aircraft each, from VF-114/USS Kitty Hawk) and claimed three Phantoms shot down. The F-4Bs, in turn, claimed two MiG-17s "probably destroyed" with AIM-9Ds – no MiGs were lost. One Phantom, reportedly damaged by anti-aircraft artillery (AAA) fire, failed to make it back to the carrier, the crew ejecting 20 miles south of Hon Gay and were rescued by a USN helicopter. The KPAF flight also engaged the egressing Phantoms, claiming one destroyed, but no others were actually lost. (RBI/III-137)

The USN raiders returned to strike Kep AB again midday on "May Day" (1 May 67). Two flights from

"Doan Z" were launched to defend the base. Two Vought F-8E Crusaders (VF-211 from USS Bon Homme Richard) quickly engaged one flight, with one of them shooting an AIM-9D Sidewinder that destroyed the MiG-17 of Lee Chang Il, killing the pilot. Following the Crusaders, the "flak suppression flight" of four Douglas A-4C Skyhawks (VA-76), firing Zuni 5-inch folding fin aircraft rockets (FFARs). The Skyhawks each carried four LAU-10 rocket pods, with four Zunis in each pod. (RBI/III-194 and 197)

Lieutenant Commander (LCdr) Theodore R. Swartz recounted, "During the [attack run] we spotted the MiGs at my two o'clock coming from right to left, I judged [at] about 450 KIAS [knots indicated airspeed]. I had no choice but to complete the firing run on the flak sites, shooting 13 Zunis in salvo… I pulled off left accepting the dogfight with the two MiGs inside my turn at my 7:30 position. The two bandits were in close formation, firing 23 and 37mm cannon. I executed a high-G barrel roll and forced them out in front. I continued the roll to their six o'clock and fired the [remaining] three Zunis individually: The first two missed but the third one hit." The MiG-17PF of Bak Dong Jun was destroyed by the rocket attack and he was killed.

It was almost two weeks later before "Doan Z" was again involved in an aerial engagement against the Americans. This time – on 13 May 1967 – it was against a major USAF strike against the Yen Vien railroad (RR) yard (20 F105Ds, 355th TFW) and Yinh Yen army barracks (16 F-105Ds, 388th TFW). USAF pilots reported sighting as many as 10 MiG-17s airborne during their attacks. During this period (1-12 May) the 923rd Fighter Regiment was heavily engaged, flying 30-40 sorties daily and claiming four "kills" (three F-4Cs and an F-105D on 12 May). To give the VPAF a brief respite, on this day "Doan Z" got the call – so this battle was solely between the KPAF and USAF.

Leading the Yen Vien strike was Lt Col Gast (354th TFS/355th TFW), who departing the target spotted three MiG-17s to the left, ten miles ahead, at an altitude of 1,000ft, climbing in a right-hand turn, and turned towards them. The Korean flight turned to meet them head on and in the split-second exchange Gast and his wingman each claimed one MiG-17 shot down with 20mm cannon fire – one MiG pilot reportedly ejected. Egressing after the strike, Major (Maj) Robert G. Rilling (333rd TFS/355th TFW) spotted two MiG-17 formations flying in "Lufbery circles" – one high and one at low altitude – and led his wingman in an AIM-9B Sidewinder missile attack, the pair claiming two more MiG-17s destroyed. Egressing from the Vinh Yen barracks strike, another Thunderchief (44th TFS/388th TFW) claimed a fifth MiG-17 destroyed with 20mm gunfire.

As the entire "strike package" exited the target area, the escorting F-4C Phantoms (433rd TFS/8th TFW) – which were ahead, "sweeping the egress route" – heard the F-105s on the radio, coordinating their attacks and defensive maneuvers, and turned back to assist them. Maj William L. Kirk engaged a pair of MiG-17s chasing a Thunderchief, shooting down one using two AIM-9Bs, while Lt Col Fred A. Haefner engaged two others, shooting down one with an AIM-7E. While the USAF credited the participating crews with seven victories, VPAF histories do not mention the air battle at all – because it involved the secret Korean unit – and "Doan Z" loss records include no pilots killed this day. The conclusion is that not all USAF kill credits proved valid and, in what losses "Doan Z" experienced, all the pilots were able to eject safely. (RBI/III-233, 234 and 236)

Three days later "Doan Z" did lose pilot Shin Dan Ho, who was killed in the crash of a MiG-17, on 16 May 1967. The lack of encounters reported in USAF/USN records indicate that Shin most likely died in a training accident.

The North Koreans battled the Americans again on 20 May when 20 "Thuds" (355th TFW) – escorted by eight Phantoms (8th TFW) – attacked the Bac Le RR yard and a similar force (388th TFW) – escorted by F-4Cs (366th TFW) – hit the Kihn No motor vehicle repair facility. The VPAF scrambled 4-5 MiG-21s and "Doan Z" launched 12-14 MiG-17Fs and (USAF estimates; actual numbers unknown), with the Fishbeds attacking the Kihn No strike force while the MiG-17s intercepted the F-105s headed for Bac Le .

Leading the Phantoms escorting the Bac Le strike was Colonel (Col) Robin Olds, a legendary USAF fighter pilot and commander of the 8th TFW. Flying top cover for the last four-ship of "Thuds", Olds later reported, "We just cleared the last of low hills lying north of Haiphong, in and east-west direction, when 10 or 12 MiG-17s came in low from the left… They

tried to attack the F-105s before they got to the target. We engaged MiG-17s about 15 miles short of the target… Our [two] flights of F-4s piled into the MiGs like a sledgehammer, and for about a minute and a half or two minutes that was the most confused, vicious dogfight I have ever been in."

The North Koreans, flying in pairs, went into a defensive "wheel" " (jet-age name for a "Lufbery circle") and, as the Phantoms attacked one element (two-ship) with Sidewinders and Sparrow missiles, they would, in turn, be attacked by the next pair of MiG-17s in the circle. Olds' wingman – "Tampa 2", flown by Maj Jack Lee Van Loan and 1st Lieutenant (1Lt) Joseph E. Milligan (in F-4C 63-7669) – was hit and caught fire, both crewmen ejecting to become prisoners of war (POWs). Meanwhile "Tampa 3" claimed one MiG-17 shot down using an AIM-9B and Olds claimed another with an AIM-7E.

The other flight of F-4Cs joined the fray, with "Ballot 1" – flown by Maj Philip P. Combies – attacking a MiG-17 pursuing Olds, about 9,000ft behind him. Olds broke hard left and the MiG overshot and rolled out heading for Kep AB, allowing Combies to slide in behind him and fire an AIM-9B. According to Combies, "The missile impacted the tailpipe area of the MiG and it caught on fire. The MiG was at approximately 1,500ft at the time of missile launch. The MiG went 'belly up' and into an uncontrollable dive and eventually impacted into the ground."

As Olds concluded, "We attacked again and again, trying to break up that defensive wheel. Finally, fuel considerations necessitated departure. As I left the area by myself, I saw [a] lone MiG still circling, so I ran out about ten miles and [turned back]; I got down on the deck, about 50 feet, and headed right for him. I don't think he saw me for quite a while, but when he did, he went mad, twisting, turning, dodging and trying to get away. He headed up a narrow little valley to a low ridge of hills. I knew he was either going to hit that ridge up ahead or pop over the ridge to save himself. The minute he popped over I [got] him with a Sidewinder."

While the official VPAF history (naturally) contains no record of this engagement, there is no mention of a victory claim (Van Loan and Milligan's F-4C) or Korean losses in Toperczer's account of this classic swirling air battle. (RBI/III-252 and 258)

Ten days later the North Koreans once again fought USN attackers and this time claimed their first victory using the MiG-21 Fishbed. The Do Xa transshipment facility, about 15 miles south of Hanoi, was attacked by an "alpha strike" from USS Hancock. Leading the raiders was a formation of Douglas A-4E Skyhawks (VA-93) attacking AAA and SAM sites defending the target. The Skyhawks evaded the initial volley of SA-2 missiles and were climbing through 16,000ft to launch their AGM-45 Shrike anti-radiation missiles when the flight leader, Commander (Cdr) James P. Mehl, was hit by a missile, ejected and was captured to become a POW. While this loss correlates with the KPAF claim, no USN pilots reported sighting a MiG during this mission and the loss is officially attributed to an SA-2. (RBI/III-283 through 290)

On 3 June 16 USAF F-105Ds (388th TFW) attacked the Bac Giang RR yard, railroad and road bridges – vital links between China and Hanoi – and two VPAF MiG-17 flights were scrambled to intercept the raiders. One flight from "Doan Z" followed, the three MiG-17s orbiting at low altitude waiting for the "Thuds" to pull out of their dives. The leading four-ship was, as usual, an "Iron Hand" flak suppression flight and as they recovered from their dive bombing attacks, Maj John Rowan ("Hambone 1") spotted the MiGs at 10 o'clock, low, two miles away, and immediately turned to engage, with two wingmen following.

After one ineffective firing pass, the three Thunderchiefs circled around and attacked again, this time "Hambone 3" – Capt Larry D. Wiggins – fired an AIM-9B from 2,500ft at the trailing MiG-17F and followed it up with 376 rounds of 20mm cannon fire, causing the MiG to explode into flames. North Korean pilot Kim The Dun was killed in the ensuing crash. (RBI/III-308)

Six weeks later (23 July), following a long recuperation time as the VPAF recovered from heavy losses in the late springtime, "Doan Z" was once again ordered aloft to engage incoming US Navy raiders. Vought F-8C Crusaders from VF-24 and VF-211 (USS Bon Homme Richard) provided the MiG sweep for a strike against the Ta Xa petroleum, oil and lubricants facility. Leading the VF-24 division (four-ship), Lt Cdr Marion H. Isaacks who later reported, "the A-4s were attacked by an estimated force of ten MiG-17s... [A four –ship of MiG-17s

turned in front of us and I] got above and behind one MiG... [After the first AIM-9D failed to guide and the second did not leave the launcher rail,] The third missile came off the rail and tracked perfectly, right up the MiG's tailpipe." Fixated on the resulting fireball and falling, flaming debris, Isaacks was in turn attacked by a second MiG-17 (of another formation of four) which damaged his right wing and aileron with cannon fire.

Leading the second section (two-ship) of Isaack's formation was LCdr Robert L. Kirkwood, who also fired AIM-9Ds at Isaack's MiG-17. When that target exploded, he maneuvered to attack one of the wingmen, firing another Sidewinder – the MiG pilot "broke left" and defeated the missile. When the MiG-17 pilot reversed his turn to the right and Kirkwood "charged his guns" (four Colt Mk 12 20mm cannon) and closed to 600ft before firing. He later stated, "I was in good position at his 6 o'clock and not pulling much G... I squeezed the trigger and closed to 300 ft. I could see my shells hitting the MiG's fuselage." Although the second MiG pilot was seen to eject, but both Lee Dong Soo and Lee Do In were killed in this battle. (RBI/III-345)

There were few aerial encounters over NVN during the summer of 1967; the VPAF reported flying only 74 fighter sorties, one third the number flown in the three springtime months. The respite was used to develop and practice new low-to-high "pop up" ambush-type attacks flown using two-ship formations, replacing the traditional four-ship fighter tactics. The newly developed "MiG ambush" trap was "sprung" on 23 August when 20 F-105Ds (388$^{th}$ TFW) and 12 F-4Cs (8$^{th}$ TFW) ingressed to once again strike the Yen Vien RR yards. Two VPAF MiG-21s attacked the F-4D flight ("Ford" flight, 555$^{th}$ TFS) covering the "Thud" formation, shooting down two, while four pairs of VPAF MiG-17Fs attacked the F-105D strike flights, damaging one. One flight of "Doan Z" MiG-17s and a pair of their MiG-21s were involved in the mêlée – one of the Fishbeds shooting 70% of its ammunition at one Phantom, but without effect. No Vietnamese- or Korean-flown MiGs were lost. (RBII/IV-11)

During a major USAF strike against Kep AB and the Dap Cau RR bridge on 30 September KPAF pilot Lim Dang An was killed while flying a MiG-17F. The "strike package" was composed of 28 F-105Ds (355$^{th}$ TFW), 12 AAA and SAM suppression F-105D/Fs, and eight MiGCAP F-4Ds (8$^{th}$ TFW). Pulling out of their dive bombing attacks and heading south out of the target area, the Thunderchief pilots observed four MiG-17s diving on them from about 14,000ft. Three of them, using their afterburners and the speed gained in their dives – estimated at 450knots – closed sufficiently to fire their 23mm and 37mm cannon, but no hits were scored. The F-105s jettisoned their external stores (bomb and missile racks) and accelerated away in excess of Mach 1. None of the Americans fired any weapons at the MiG-17s, who returned to Kep without Lim Dang An. (RBII/IV-29)

Eighteen days later, "Doan Z" lost another pilot – Kim Hyun U – during a USAF attack on the Dai Loi RR bypass bridge. The "strike package" included 16 F-105Ds (355$^{th}$ TFW) with four F-105D/F for suppression of enemy air defenses (SEAD) and four Phantoms for MiGCAP. Typically, "Doan Z" positioned four MiG-17s to intercept the "Thuds" as they pulled out of their dives and began their egress, three of the four "strike flights" reporting encountering the MiGs. One Kim Hyun U, intent on intercepting the two F-105Ds (Wildcat 1 and 2) ahead, flew across the nose of "Wildcat 4", Maj Donald M. Russell, left to right at about 2,000ft range. Russell later stated, "I came out of afterburner, extended the speedbrakes, and maneuvered to his 6 o'clock position. He started a slow left turn to position himself in an attack position on a preceding F-105. His left turn helped me get into a good firing position, and I opened fire at an estimated 1,000 feet. I noticed flames from both sides of the MiG-17 aft of the cockpit area. I followed him for a few moments and saw the fire increase. The aircraft rolled right and headed straight down in flames." (RBII/IV-42)

Almost two months later (16 December 1967), the tables were turned as a pair of "Doan Z" MiG-21 pilots claimed a USAF F-4D destroyed. To cover the morning strikes, eight 8$^{th}$ TFW Phantoms mounted a MiGCAP over Kep AB. Four Korean-flown MiG-17s and the two MiG-21s were scrambled from Noi Bái AB to engage them. The Fresco's attacked one flight of Phantoms – in an inconclusive engagement – and the Fishbeds attacked the other as they began their egress, firing R-3S (AA-2 Atoll) heat-seeking missiles. One hit the F-4D (66-7631/555$^{th}$ TFS) flown by Maj James F. Low (nine "kill" Korean War ace) and 1Lt Howard J. Hill, forcing both to eject

approximately five miles west of Kep. The American airmen were both captured and became POWs. (RBII/IV-73)

Three days later "Doan Z" again launched four MiG-17s and a pair of Fishbeds, joining four VPAF MiG-21s and two flights of Frescos that attempted to disrupt two large USAF strikes – one against Viet Tri and Tien Cuong RR yards and the other attacking the Dai Loi RR bridge. They were successful against the first strike force ("Alpha Force": 16 F-105Ds escorted by eight 8th TFW F-4Ds), forcing the "Thuds" to jettison their bombs and begin defensive maneuvering, one of the escorting Phantoms damaging a Korean-flown MiG-17F with 20mm gunfire from its belly-mounted SUU-23/A "gun pod".

Minutes later the second "strike package" ("Bravo Force": sixteen 355th TFW F-105Ds with four F-105F "Wild Weasels" and escorted by eight 8th TFW F-4Ds) arrived in the area. The "Wild Weasels" led the strike force and, as the leading Phantoms turned back to face a "threat" approaching from the rear, the F-105F pilots spotted and engaged four MiG-17Fs ahead, including the one damaged by the Phantom's gunfire. According to Maj William M. Dalton, "The mission progressed as normal until approximately 35 miles southwest of the target. At that time bomb smoke was noted to the right of course, indicating the strike planes [ahead] had jettisoned their bombs. Shortly after, I saw a MiG pull up on a steep climb approximately five or six miles [ahead] at 12 o'clock and called it out. As we continued several aircraft came into view: F-4s, F-105s, and four to six MiGs."

Leading the flight, Maj Robert R. Huntley ("Otter 1", 333rd TFS) engaged one of the MiG-17Fs, damaging it with 20mm fire. Dalton ("Otter 2) continued, "I was flying… approximately 1,500-2,000 feet to the rear of lead, and at this time I saw a MiG-17 low and [to the] right, apparently going after Huntley. I called him and started slowing down and turning right to get behind him. I closed as much as I could and started tracking and fired… As verified by my gun camera film, I observed impacts on the left wing and left side of the fuselage under the cockpit, at which time the MiG broke up and left. I turned to follow him but he rolled and started down inverted to my left."

Following the lead element, Capt. Philip M. Drew ("Otter 3", 357th TFS) engaged a third MiG-17F, firing 756 rounds of 20mm and "saw numerous 20mm rounds impacting in his fuselage and his right wing root area. [After passing over the damaged MiG] I looked back at my target one last time and saw him rolling further right into 120º bank turn and a 30º dive from about 7,000 feet altitude." Although Henley's "kill claim" was denied by Seventh AF HQ, Toperczer reports that all three MiG-17Fs were lost; however, fortunately all three pilots ejected safely. (RBII/IV-77)

The Korean-flown MiG-21s scored again in the new year – on 5 January 1968 – when a pair of them intercepted the "Wild Weasel" flight providing SEAD for a strike against the Dong Luc RR bridge, near Kep. The flight leader had just launched an AGM-45 Shrike against an SA-2 site when the "Doan Z" Fishbeds attacked, one of them damaging the F-105F's left wing with cannon fire. The "Thud" caught fire, forcing the two crewmen to eject – both died of their injuries. (RBII/IV-86)

Almost two weeks later (18 January 1967) "Doan Z" MiG-17s intercepted one of three large "strike packages" penetrating deeply into NVN territory. "Alpha Force" (four 8th TFW F-4D "strikers" with eight F-4Ds and F-105Fs providing SEAD and a pair of Phantoms as MiGCAP) was headed for the Bac Giang thermal powerplant, about 20 miles northeast of Hanoi, at approximately 12,000ft altitude. "Alpha Force" was engaged by the North Koreans while "Bravo Force" – primarily "Thuds" headed to bomb the Ha Gia RR siding – was intercepted by a pair each of VPAF Frescos and Fishbeds.

The Koreans – flying two pair of MiG-17Fs – were positioned in an orbit at 2,000m (6,560ft) and, after the SEAD flights passed overhead and to the east, they began climbing as the "strike flight" ("Otter" flight, 435th TFS) approached. After the Phantoms released their AGM-62 Walleye TV-guided glide bombs two to three miles from the target, Maj Kenneth A. Simonet began a right-hand climbing turn as two MiG-17s closed from right 1-2 o'clock low, with a second pair following two miles behind and 2,500ft below the leaders. However, Simonet – with 1Lt Wayne O. Smith in the rear cockpit – had spotted a MiG-17 at left 10 o'clock and immediately turned left – never seeing the pair of MiGs approaching from the right – to engage with a Hughes AIM-4D Falcon heat-seeking missile. As he was tracking the target in front of him, the leading MiGs attacked "Otter 1" (F-4D 66-8720) with cannon fire, causing severe damage

that eventually forced Simonet and Smith to eject approximately 15 miles southeast of Kep AB.

Meanwhile Simonet's wingman ("Otter 2"/F-4D 66-7581) was shot down by the second MiG-17F, both crewmen ejecting as the aircraft crashed about one to two miles east of the target; all four Phantom crewmen were captured. Although Simonet and Smith were officially credited with a victory, no KPAF (or VPAF) pilot was killed, so the actual result is unknown. (RBII/IV-97A)

Four weeks afterwards (12 February 1968) "Doan Z" scrambled two MiG-21s from Noi Bái AB to intercept a small USAF "Commando Nail" raid. The radar-bombing attack was aborted due to bad weather and, after escorting the four F-4D "strikers" from the target area, the two flights of MiGCAP Phantoms (435th TFS/8th TFW) returned for a "MiG sweep". By this time the Fishbeds, having reported making one firing pass on the "strike flight" – during which wingman Kim Ghi Hoan claimed to have destroyed one Phantom (no USAF crews witnessed any attack by MiGs that day, or were damaged or lost due to MiG attack) – climbed to 40,000ft altitude and began a left-hand orbit, about 75 miles east of Hanoi, with Kim approximately three miles behind his leader.

Led by Lt Col Alfred E. Lang and 1Lt Randy P. Moss, "Buick" flight approached from the east at 30,000ft and obtained radar contact with the MiGs at 22 miles. At nine miles Lang visually acquired both Fishbeds, identified them as such, and Moss locked onto the trailing MiG (Kim) at six miles – Lang assigned the leading MiG-21 to "Buick 3". Closing rapidly (overtake 600kts) from the target's 8 o'clock, Lang began firing AIM-7Es at 4.5 miles while climbing through 34,000ft at Mach 1.3. Later he related, "Lieutenant Moss and I… observed the first missile to explode in the MiG's 7-8 o'clock position and the second missile explode[d] in the MiG's 10 o'clock position. As the MiG flew through the explosion he rolled inverted, yawed 30-40 degrees right and then entered a tumbling spin. The pilot did not eject…" Toperczer reports that Kim "ejected from his damaged aircraft but died descending by parachute."

"Buick 3" fired two AIM-7Es, but failed to obtain any hits, the MiG-21 "broke left and down" and was last seen "going supersonic toward Phuc Yen [Noi Bái AB]" – Lang gave chase and "close[d] to 9-10 miles, but we had to break off the attack because aircraft number 4 was minimum fuel." (RBII/IV-111)

**Conclusion**

It is fitting that the 12 February combat was both the last loss by "Doan Z" and its last victory claim (a "shared kill" with a VPAF MiG-21 pilot was recorded on 23 February). While "Operation Rolling Thunder" continued until 1 November 1968, on 31 March President Lyndon Johnson began progressively moving the "bomb line" southwards, eliminating USAF/USN attacks on Hanoi and Haiphong and, consequently, reducing MiG engagements to zero. By the end of the year the VPAF considered "Zoan D's" mission complete and the North Koreans returned home, transferring their remaining MiG-17Fs to the 925th Fighter Regiment (which was equipped with 36 MiG-19s and four MiG-15UTIs).

Bentz concluded, "With the advent of the U.S. bombing halt [2 November 1968], and the graduation of several more classes of North Vietnamese pilots, the North Korean Group Z was disbanded and their pilots departed North Vietnam in February 1969. The North Koreans fared poorly and lost at least 14 MiGs (according to my research). According to Vietnamese sources, the North Koreans claimed 26 kills in air combat between March 1967 and mid/late 1968. Cross-referenced with US loss records, I can only correlate/verify nine of these. The North Koreans suffered the loss of 14 Air Force personnel killed; 12 pilots and 2 ground crew."

The 14 "Korean soldiers" are buried in a cemetery in Bac Giang province, about 37 miles northeast of Hanoi. Every year, on 30 April, members of the DPRK Embassy visit the cemetery to pay tribute to their fallen heroes.

Douglas Dildy (#844), USA.

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Seventeen KPAF pilots, plus their VPAF "advisor", Phan Khac Hy from the VPAF Command Committee (sitting fourth from the right), of the Korean People's Air Force "Group Z", deployed to Kep AB, North Vietnam, 4 June 1968. (Photo: Guy Bentz)

Editor's Note: A review of Istvan Toperczer's book, Silver Swallows and Blue Bandits: Air Battles over North Vietnam 1964-1976, appears on page 103 of this issue of SAFO.

# The F-5 Abroad (Part 1)

Tim Callaway



Northrop F-5E of the Brazilian Air Force. Keith Draycott

*[Editor's notes: Tim Callaway of Aviation Classic extracted the information on the F-5 that appeared in his Aviation Classic #19, and submitted it for publication in SAFO. This is the first of two parts – the second part will appear in the next issue of SAFO. It is hope that these articles will give you a good idea of the high quality of Tim's excellent magazine.]*

Aside from the United States, thirty seven other countries have used the F-5 and T-38, a remarkable record of success for the aircraft. Many remain in service today, and are likely to remain so until at least 2030 due to the original fighter's remarkable performance and reliability; and a number of equipment and capability upgrades by users around the world. This is a list of all the countries that have operated the F-5 and T-38 and includes the upgrades and variants produced during the types 54 years of operational service, as well as a table of the total numbers built by Northrop and under licence in various countries.

| Type | Northrop | Canada | Switzerland | Korea | Taiwan | Spain |
|---|---|---|---|---|---|---|
| F-5A | 624 | 89 (CF-5A) 75 (NF-5A) | | | | 18 (SF-5A) |
| RF-5A | 89 | | | | | 18 (SRF-5A) |
| F-5B | 200 | 26 (CF-5D) 30 (NF-5B) | | | | 34 (SF-5B) |
| F-5C | | | | | | |
| F-5E | 792 | | 85 | 48 (KF-5E) | 242 | |
| RF-5E | 12 | | | | | |
| F-5F | 146 | | 6 | 20 (KF-5F) | 66 | |
| T-38A/AT-38B/T-38C | 1,139 T-38A built with 47 other versions. 562 T-38A/AT-38B upgraded to T-38C | | | | | |

**Austria**

Having been flying the Saab J35Ö Draken as their front line fighter since 1985, in July 2002 the Austrian Air Force selected the Eurofighter Typhoon to become their new air defence fighter. The first Typhoon was not delivered until July 2007, so between July 2004 and July 2008, twelve Northrop F-5E Tiger IIs were leased from the Swiss Air Force as the last Draken was retired in December 2005. The F-5s fulfilled the air defence role and were returned to Switzerland as the Typhoon delivery progressed.



Before and after – A Saab J35Ö Draken with a Northrop F-5E Tiger II of the Austrian Air Force. Luigino Caliaro

**Bahrain**

The Bahrain Defence Force (BDF) was first established in 1977 and was intended as a purely defensive force of combined Army, Navy and Air Force units. Their first jet fighters, eight F-5Es and four F-5F trainers were supplied from stocks held in United States in two batches ordered in 1982 and 1985. Four more F-5Es were added in 1987, the same year the BDF was separated into the Bahrain Amiri Air Force, Army and Navy. These aircraft remain in service today, alongside twenty two F-16Cs and Ds purchased in 1990, and are based at Sheik Isa Air Base.



A Northrop F-5F of the Bahrain Amiri Air Force. Dave Jeffreys

**Botswana**

The Air Wing of the Botswana Defence Force purchased ten upgraded ex-Canadian Armed Forces Canadair CF-5As and three CF-5Ds from Canada in 1996 to replace their BAC Strikemasters. Three more CF-5As and two CF-5Ds were purchased in 2000 to replace losses in the single seat force and supplement the training capability. Nine CF-5As and all five two seaters remain in service today.

**Brazil**

Brazil ordered 37 F-5Es and 6 F-5B two seat aircraft in October 1974, the F-5Bs being the last of the version to be built by Northrop. The aircraft entered service in March 1975, replacing the Gloster Meteor F8 and Lockheed P-80 Shooting Star as Brazil's front line fighters. In 1987, the fleet was supplemented by 22 ex-USAF F-5Es and four F-5F two seaters assembled from spare parts so essentially brand new aircraft. These four F-5Fs replaced the F-5Bs. In 1998 Elbit of Israel alongside Embraer won a contract to upgrade the Brazilian F-5 fleet, known as the F-5UP programme. This upgrade includes fitting the FIAR Grifo X radar, a new navigation system and avionics enabling the carriage of a wider range of air to air missiles. A total of 45 F-5EMs and three F-5FMs were produced to this standard by 2007. In September that year, eight more F-5Es and three F-5Fs were purchased from the Royal Jordanian Air Force, to be upgraded to the F-5EM standard. These aircraft are still in service with four units of the Brazilian Air Force and are likely to remain so until at least 2030.



A Northrop F-5EM of the Brazilian Air Force on a tanker exercise. Chris Lofting

## Canada

Canadair built the F-5 under licence for the Canadian Armed Forces, the first aircraft being delivered 5 November 1968. These aircraft were redesignated CF-5A for the single seat fighters and CF-5D for the two seat aircraft, equivalent to the F-5A and F-5B respectively. 89 CF-5As and 26 CF-5Ds were built, 44 of which were placed in storage due to defence cuts in the early 1970s. Sixteen CF-5As and four CF-5Ds from these stored aircraft were supplied to Venezuela in 1972. In the same year, air to air refuelling capability was added to the Canadian aircraft in service. In 1988, 23 CF-5As and 33 CF-5Ds were upgraded by Bristol Aerospace in Winnipeg, a programme that was to include strengthening of the airframe, rewiring, the addition of a head up display, inertial navigation system, weapons aiming and computing system and a new central computer. The first modified aircraft, a CF-5D, was delivered in August 1989. This initial modification programme was followed in 1990 by an avionics suite upgrade to 36 CF-5s to enable the type to be a more effective lead in trainer to the CF-18s then entering service. Further budget cuts meant that the CF-5 fleet was retired in 1995, only four years after the first upgraded aircraft flew. The aircraft were placed in storage until in 1996, when ten CF-5As and three CF-5Ds were sold to Botswana, followed by three more CF-5As and two CF-5Ds in 2000.



419 Squadron of the Royal Canadian Air Force painted one of their Canadair CF-5As in this commemorative Moose scheme. Canadian Forces

## Chile

Chile purchased fifteen F-Es and three F-5Fs, the first being received in March 1974 and delivered to Grupo 7 at Cerro Moreno Air Base. In 1993, Israeli Aircraft Industries began work on an upgrade contact to fourteen F-5Es and two F-5Fs. This included new multi-function displays and a head up display as well as upgraded avionics, computers, GPS navigation system and most importantly the powerful Elta EL/M-2032B multi-mode pulse doppler radar. The addition of air to air refuelling probes in 1997 increased the capabilities of what were the best equipped F-5s in the world at that point, now known as the F-5 Tigre III. In 2003, the aircraft received another upgrade including a new expanded multi-function display and the ability to fire the Python IV short range and Derby long range missiles. Now known as the Tigre III Plus, ten of the aircraft were still in service in 2009 but were being steadily replaced by eighteen F-16s purchased from the Netherlands.



Northrop F-5 Tigre III of the Chilean Air Force. Chris Lofting




Side view of a Northrop F-5 Tigre III of the Chilean Air Force. Keith Draycott

**Republic of China (Taiwan)**

The Republic of China Air Force placed its first order for 60 F-5As and Bs in 1963, the first tranche of aircraft from a total requirement of 115 for the type. The first F-5s were delivered in 1964, equipping three squadrons of the 1st Wing at Tainan Air Base. In 1972, 48 Taiwanese F-5s and their associated spares were transferred to the South Vietnamese Air Force in return for the US stationing two squadrons of F-4 Phantoms in Taiwan to maintain air defence, and the supply of 28 T-38s to Taiwan to maintain pilot proficiency while the aircraft were deployed. Twenty of the aircraft sent to Vietnam were returned in 1973, along with 28 additional F-5Es supplied by Northrop in 1975, at which time the F-4 squadrons and the T-38s returned to the US. The Aerospace Industrial Development Corporation of Taiwan (AIDC) also began producing the F-5E and F under licence in 1974, delivering the first 100 F-5Es by November 1977. Altogether 242 F-5Es and 66 F-5Fs were produced by the AIDC by December 1986, a figure supplemented by the purchase of 45 F-5s from the US in 1979. These 39 F-5Es and six F-5Fs were fitted with wiring for the Hughes AGM-58A Maverick air to ground missile and supplied with laser target designator kits, 500 Mavericks and their pylons. In March 1979, twelve undelivered Egyptian F-5Es were deployed to North Yemen at the request of the US with Saudi Arabian support, along with over 80 Taiwanese pilots and groundcrew to operate them. Four Saudi F-5Bs were also made available in support of this operation as continuation trainers for the deployed Taiwanese pilots. The pilots were recalled in 1991 during the Gulf War as Yemeni allegiances had changed. A programme of upgrades during the 1980s included a self defence aids suite and several of the last aircraft built were modified with enlarged leading edge extensions and the nose from the F-20 Tigershark with its improved aerodynamics. In 1995, seven Taiwanese F-5Es were modified to become photo-reconnaissance RF-5E Tigergazers with a camera nose, the work carried out by Singapore Technologies Aerospace (STAero). Export restrictions on new radars from the US led to Taiwan developing the Tiger 2000 project, covered later in this magazine. From 1997, the AIDC F-CK-1, the F-16 and the Mirage 2000 began replacing the F-5 in Taiwanese service, many being placed in storage as a reserve force, but a number of the F-5Fs and RF-5Es were to continue in service until today.




A pair of Northrop RF-5E Tigergazers of the Republic of China (Taiwan) Air Force on take off. Kim L Seung

**Egypt**

A deal for 42 F-5Es and eight F-5Fs purchased from the US was brokered by Saudi Arabia for the Egyptian Air Force, and although training for air and ground crew began at McClellan Air Force Base in 1978, the contract was cancelled in 1979.

**Ethiopia**

Ten F-5As and two F-5Bs were delivered to the Ethiopian Air Force in 1966, followed by an additional four F-5As in 1971. Four more F-5As were supplied from Iran in 1974, joined by eight F-5Es from the US in 1975, for the first time with AIM-9B Sidewinder missiles. These aircraft saw action against the Somalian forces attempting to occupy the Ogaden region from 1977 to 1978 claiming a number of air to air kills while being flown by both Ethiopian and Israeli pilots. In June 1985, between ten and fourteen Ethiopian aircraft were purchased by Iran to support their F-5 fleet in the face of a US arms embargo on both countries.

**Germany**

The Luftwaffe use 35 USAF T-38Cs at their training facility at Sheppard Air Force Base in Texas, where they provide crew training hours for German F-4 Phantom, Tornado and Typhoon crews.

**Greece**

Training of Hellenic Air Force air and ground crew on the F-5 and its systems began at Williams Air Force Base in Arizona toward the end of 1964. Greece would be the first European nation to operate the F-5, receiving 52 F-5As, 16 RF-5As and nine F-5Bs with deliveries beginning in May 1965. One of the F-5As was an ex-USAF aircraft, otherwise they were all brand new. The F-5s were used for air defence in July 1974 during the Cyprus crisis with Turkey. Twelve more F-5As were acquired from Iran in 1974, along with two batches from Jordan, 13 F-5As and 8 F-5Bs in 1983, then 13 more F-5As in 1989. Norway supplied Greece with nine F-5As in May 1986, followed by ten Canadair NF-5As and one NF-5B from the Netherlands in 1991. The Canadair built aircraft lacked a commonality of spares with the rest of the Greek F-5 fleet, so were withdrawn from service by 1997. On 29 March 2001 the last F-5s were withdrawn from service with the disbandment of the 343rd Squadron at Mikra Air Base.



Many of the Northrop F-5As and Canadair NF-5As were put out as airfield decoys by the Hellenic Air Force. Chris Lofting



A side view of a Northrop F-5A Freedom Fighter of the Hellenic Air Force. Keith Draycott

**Honduras**

Tensions between Honduras and Nicaragua during the 1980s prompted the Fuerza Aerea Hondureña (Honduran Air Force or FAH) to seek more modern fighters for air defence. A US arms embargo initially blocked their acquisition of the F-5 and later the IAI Kfir C2, but when this was lifted in 1987 ten ex-USAF F-5Es and two F-5Fs were supplied with spares and training for air and groundcrew. The F-5s supplemented the Honduran Dassault B.2 Super Mystères in the fighter role until these were withdrawn in 1996. The F-5s were overhauled by Northrop at Palmdale in 1994, but given the return of US arms restrictions to Honduras and after 1996 the aircraft were maintained with the assistance of Chile, but rumours of a transfer of aircraft between the two countries are incorrect. The aircraft still maintain the air defence of Honduras to this day.




A Northrop F-5F of the Fuerza Aerea Hondureña . Juan Carlos Cicalesi

**Indonesia**

In April 1980 the first of twelve F-5Es and four F-5Fs were supplied to Indonesia to replace ex-Australian Air Force CA-27 Sabres. Eight F-5Es and four F-5Fs were upgraded with improved avionics and radar by SABCA of Belgium from 1995 to increase their commonality with Indonesian F-16s and Hawk trainers and allow the aircraft to act as a lead in fighter trainer for the F-16, the first modified aircraft being delivered in 1999. Although the F-16 is in service there are plans to increase the F-5 fleet. In March 2012 it was announced that both Korea and Taiwan have offered additional F-5s to Indonesia and their current aircraft have sufficient hours to remain in service until at least 2020.




Two Northrop F-5Es and an F-5F of the Indonesian Air Force sit next to the demonstrator of the RF-5E on the ramp at Palmdale. Northrop

**Iran**

The Imperial Iranian Air Force became the first service outside the US to operate the F-5 when it received its first eleven F-5As and two F-5Bs in January 1965 from an order placed the previous year. Altogether 107 F-5As, 13 RF-5As and 20 F-5Bs were delivered by January 1971, although some sources suggest as many as twenty RF-5As were supplied. In 1972, 32 of the F-5As were crated and sent to Vietnam at the request of the US, in return for more F-4E Phantoms being supplied to Iran. With the advent of the F-5E, Iran ordered 141 F-5Es and 28 F-5Fs in February and July 1972, replacing the F-5As as they were delivered from February 1974 onwards. The Iranian F-5Es had Martin Baker ejection seats, an inertial navigation system and a weapons aiming computer. Many of the F-5As were disposed of to other countries, four to Ethiopia, 12 to Greece, four to Morocco and 30 F-5As and 6 F-5Bs to Jordan between 1974 and 1975. Plans to replace the F-5E with the F-16 and F-18 were halted by the Islamic Revolution of 1979. The Islamic Republic of Iran Air Force continued to operate the reliable F-5, with an estimated 45 still being serviceable by October 1985. The type was used extensively in the Iran-Iraq War of 1980 to 1988 as a fighter and ground attack aircraft. Spares were obtained from sources abroad and from cannibalised airframes, before the Iranian aircraft industry developed the capability to produce parts themselves, claiming to be able to build 55% of the aircraft in 1995. Between ten and fourteen F-5s were purchased from Ethiopia in June 1985, but the aircraft were in a poor condition having been stored in the open. It is estimated that five units operate the F-5A, E and F today. Unknown numbers of HESA Azarakhsh and Saeqeh fighters and the HESA Simorgh trainer derived from the F-5 design have been built, probably in small numbers.




The Islamic Republic of Iran Air Force still operate the Northrop F-5E, seen here coming in to land. Khashayar Talebzadeh




A side view of a Northrop F-5E of the Islamic Republic of Iran Air Force. Keith Draycott

**Jordan**

In 1973 the US agreed to the transfer of 30 F-5As and four F-5Bs from Iran to the Royal Jordanian Air Force in two tranches between December 1974 and September 1975. Two more F-5Bs were also ordered from Northrop in 1973. That same year, it was agreed to supply Jordan with the first of 61 F-5Es and 12 F-5Fs which were delivered from Northrop between 1975 and 1979 replacing the F-104 in service. In January 1989 the first Jordanian F-5E upgraded by Smiths Industries in the UK was delivered, with a new head up display, inertial navigation and targeting system, weapon aiming computer and radar warning receivers were fitted, and the Selenia ALQ-234 ECM pod could be carried. In this guise, the aircraft was known as the F-5EM, four of which were part of the package of aircraft sold to Brazil in 2007 along with four F-5Es and three F-5Fs. In 1993, it was decided to reduce the Jordanian fleet in order to allow and upgrade of 23 F-5Es with a new radar. To fund this, four F-5Es were to be sold to Indonesia, but this was vetoed by the US. Seven F-5Es were sold to Singapore in 1994, followed by 10 F-5Es, three F-5EMs and two F-5Fs which were sold to Kenya with spares and maintenance and training support in 2008.



Northrop F-5E and F-5F of the Royal Jordanian Air Force. RJAF

**Kenya**

The first order for F-5s was placed by Kenya in 1975 for ten ex-Iranian aircraft, but this did not go ahead. The following year the US agreed to sell ten F-5Es and two F-5Fs and deliveries began in March 1978. Two more F-5Es were supplied in 1982 to replace losses. Pilots were trained in the US, taking part in reconnaissance operations over Somalia in 1996. Financial problems affected the maintenance of the aircraft until a team of US engineers were sent to Kenya in 2007 to improve the support infrastructure for the type. 10 F-5Es, three F-5EMs and two F-5Fs which were sold to Kenya by Jordan in 2008, fitted with new avionics and communications equipment from Rockwell Collins. From October 16 2011, Kenyan F-5Es supported ground forces fighting in Somalia gainst Al-Shabab terrorists and remain in service today.



A Northrop F-5E of the Kenyan Air Force. These aircraft have seen action over Somalia against the Al-Shabab terrorists. USAF

**Republic of Korea**

By far the largest user of the F-5, the first batch of aircraft for Korea came under the Military Assistance Programme (MAP), when 88 F-5As and 20 F-5Bs were delivered between 1965 and 1972. Aside from these, a further 16 F-5Bs were purchased directly from Northrop, followed in 1971 by eight RF-5A reconnaissance aircraft. As with other countries, in 1972 the US requested the transfer of 48 F-5As to Vietnam, the loaned aircraft to be replaced by F-5Es. This was changed by Korea to sending 36 F-5As to Vietnam in exchange for the lease of 18 F-4D Phantoms. Korea decided on an expansion of its Air Force, with the first of 126 F-5Es and 20 F-5Fs being delivered on August 27 1974. Of the F-5As sent to Vietnam, 19 were returned in 1975, but by 1989 all the early F-5s had been replaced in service by the newer models, three of the F-5As being sold to the Philippines Air Force. In 1979 the Hanjin Corporation, a division of Korean Air Lines, was ready to begin building aircraft under licence. The F-5 was chosen and 48 KF-5Es and 20 KF-5Fs were ordered, the first KF-5F flying on September 9 1982. In August 2007, the last F-5As and Bs were retired, the F-5E and F fleet, having undergone a series of avionics and systems upgrades over their service life, are likely to remain with the Korean Air Force for some time. In 2010 174 were still operational, some having been replaced by the KAI F/A-50, F-15K and KF-16. In addition to the F-5 models, in April 1999, Korea leased 30 T-38A trainers which were returned to the US in 2009 with the introduction of the KAI T-50 Golden Eagle.



A Northrop F-5F of the Republic of Korea Air Force uses its drag chute on landing. USAF



A side view of a Northrop F-=5E of the Republic of Korea Air Force. Keith Draycott

**Libya**

In May 1967, the Royal Libyan Air Force reached agreement with the US for the purchase of eight F-5As and two F-5Bs. These were all delivered by 1969 when a coup established the Libyan Arab Republic on September 1.The withdrawal of US support for the aircraft meant the Greek Air Force took over training and maintenance support, but a lack of spares limited the aircraft in Libyan service and they were quickly replaced by Mirage IIIs. In 1975, five F-5As and two F-5Bs were transferred to the Turkish Air Force, only one F-5A remaining in Libya in a dump at Oki Ben Nafi Air Base.



The only known remaining Libyan F-5A is this one in the dump at Oki Ben Nafi Air Base. Chris Lofting

To be continued

# Exotic Birds 5

Greg Kozak



**Kurdish Peshmerga EC-135.** The Kurds in Iraq have gained a greater level of autonomy in the wake of developments in the Middle East. One manifestation of this is expansion of the Peshmerga, the armed forces of the autonomous region of Iraqi Kurdistan. The Peshmerga includes an air component, one of whose EC-135s is pictured here. Note the Peshmerga fin flash, whose colors reflect those of the Kurdish flag. Image from http://defence-blog.com.



**Georgian L-39 with Cross.** This is admittedly a strange and mysterious L-39. I am not certain about its origin, but I conjecture that it is a Georgian example, due to the color and configuration of the cross on the fuselage. It appears to be parked at a maintenance depot alongside several other L-39s, including one Russian, and at least two Ukrainian, examples. If anybody can offer further clarification and identification regarding this unusual aircraft, please do! Image from unknown internet source.



**Syrian Navy Mi-14.** This shabby Syrian Navy Mi-14 wears rough, hand-painted insignia. I am not at all certain if I would board it! The segmented fuselage roundel is of particular interest. The roundel appears non-standard, but I am not sure of this. I have seen pictures of one other Syrian Navy helicopter, a Ka-25, sporting a similar roundel. Image from the Finnish Aviation Photography Association via Teemu Tuuri, at www.fap.fi.



**Ethiopian Army Air Wing Twin Otter.** The Ethiopian Army Air Wing has operated several DHC Twin Otters. This plain example is marked with the current, and quite complex, Ethiopian Armed Forces roundel. The roundel and the identification number above it on the fin are the only markings on this aircraft. Note the light gray and sand wrap-around camouflage, barely discernable from this vantage point. Image from unknown internet source.




**Seychelles Twin Otter.** This Twin Otter of the Seychelles Peoples Defence Forces features the new national flag, adopted in 1996, on the outsides of its engine nacelles. Earlier Seychelles aircraft were marked with a red-white-green roundel and accompanying fin flash, echoing the layout and colors of the prior national flag. The Seychelles Peoples Defence Forces badge is worn on the fin. Image from www.lietadla.com



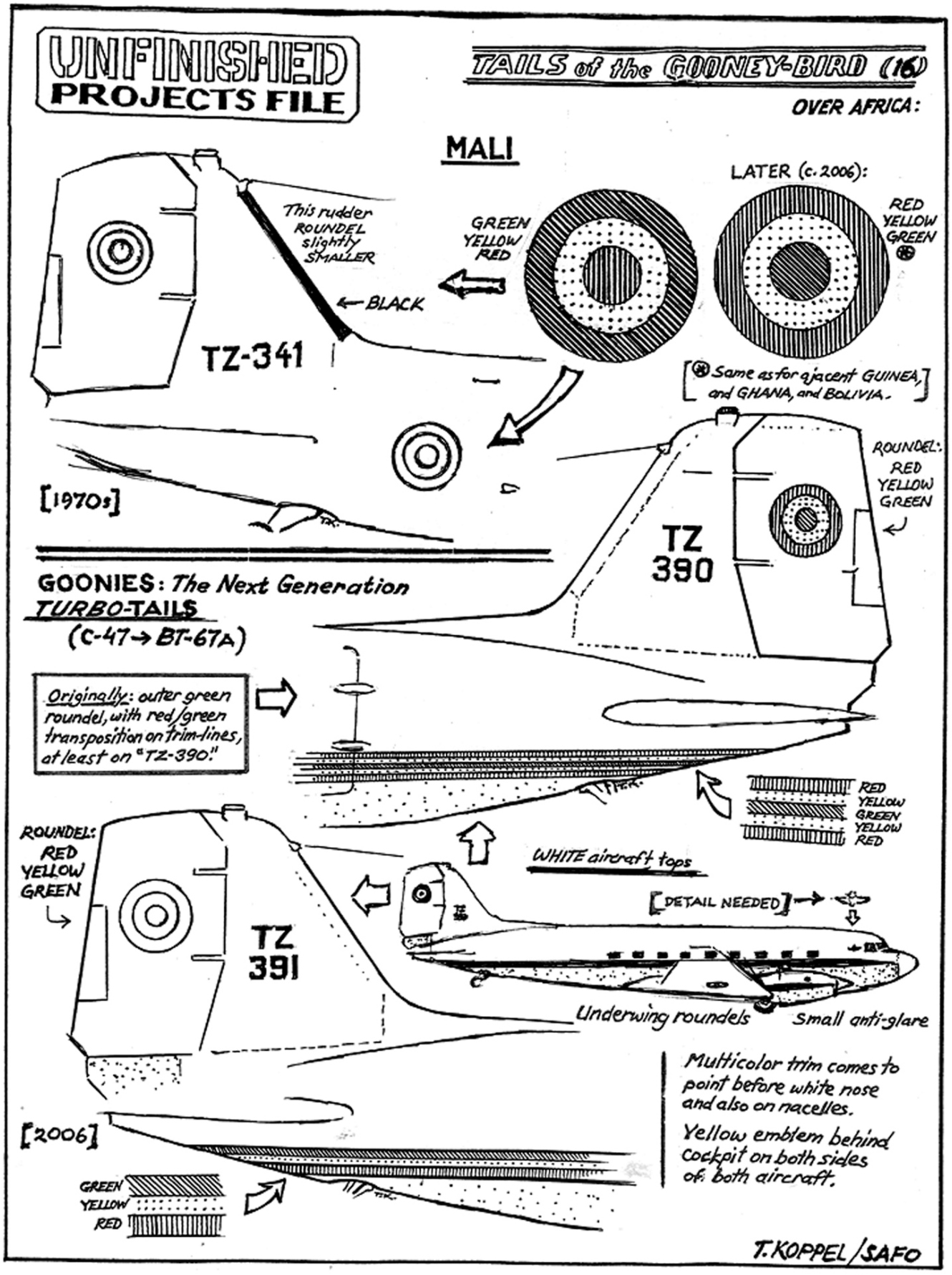

**Khmer Rouge Shenyang J-6.** The Khmer Rouge used a number of Shenyang J-6s, Chinese copies of the MiG-19, during their savage and murderous reign of terror in Cambodia. This image clearly shows the arrangement of the red and yellow insignia on the aircraft. Note the raked nature of the fin flash, which also partially extends onto the rudder. It is unclear from this photo, and from other photographic evidence as well, whether the wing insignia are also of similar configuration, or are instead rectangular in form. Image from unknown internet source.



**Namibia Mi-24.** This uncommon and very clear image shows one of two Mi-24s in Namibian service. No identification markings, such as aircraft number or serial number, are present. Of interest is the Namibian Armed Forces badge, on the middle of the fuselage, to the front of the national flag on the tail boom. The Namibian Armed Forces badge is equally as complex as the Ethiopian Army Air Wing roundel! Image from unknown internet source.



**Malawi Do-28s.** Quite a rare photo, this picture of a pair of Do-28s from Malawi shows the color scheme these aircraft inherited from their service in the German air force. The alternate Malawi air force insignia is also evident, in place of the usual and more common black-red-green disk roundel seen on their C-47s and Ecureuils. Note that the insignia is worn on both top-wing positions. Photographic evidence indicates that the bottom wings are marked with the aircraft identification number in white, mirroring that on the bottom of the fin. The Do-28s were numbered serially from 01-MAAW through 08-MAAW. Image from unknown internet source.


UNFINISHED PROJECTS FILE
TAILS of the GOONEY-BIRD (16)
OVER AFRICA:
MALI
LATER (c. 2006):
This rudder ROUNDEL slightly SMALLER
← BLACK
GREEN YELLOW RED
RED YELLOW GREEN ⊛
TZ-341
[⊛ Same as for adjacent GUINEA, and GHANA, and BOLIVIA.]
[1970s]
ROUNDEL: RED YELLOW GREEN
TZ 390
GOONIES: The Next Generation
TURBO-TAILS
(C-47 → BT-67A)
Originally: outer green roundel, with red/green transposition on trim-lines, at least on "TZ-390."
RED YELLOW GREEN YELLOW RED
WHITE aircraft tops
ROUNDEL: RED YELLOW GREEN
TZ 391
[DETAIL NEEDED]
Underwing roundels
Small anti-glare
Multicolor trim comes to point before white nose and also on nacelles.
Yellow emblem behind cockpit on both sides of both aircraft.
[2006]
GREEN YELLOW RED
T. KOPPEL/SAFO

## -books-books-books-books-books-books-books-books-books-books-books-books-books-




**Fokker C.5** Volume II: Export,, by Edwin Hoogschagen. 256 pages. 22 mm by 280 mm, hard bound. In Dutch with English captions and summery at end of each chapter, Published by Lanasta, Slenerbrink 206, 7812 HJ Emmen, Netherlands. www.lanasta.com. info@lanasta.com. €37.95.

I've taken the liberty of quoting from the Introduction (with minor changes):

"After World War I Fokker moved his company to the Netherlands, and continued to develop and produce military aircraft. The C.5 made its debut in early 1924.

"In its first incarnation, the C.5 was based on a strengthened and modified C.4 fuselage, fitted with a Liberty engine of 420hp. An even more refined prototype, with redesigned, 20cm narrower fuselage and improved cockpits for both pilot and observer, was quickly built to meet wishes of the Dutch army air force. Several sets of wings with different span could be used and various engines could be installed

"The C.5 was constructed following the typical Fokker techniques; a welded steel tubular frame formed the base for the fuselage, to which the lower wing was bolted. The horizontal and vertical tail planes were made from tubular frames as well. The top wing rested on cabane struts and N struts connected the wings with each other. The wings were made from wood, partly covered with ply. Linen (sic) was applied over the entire wing.

"After a small number of planes had been delivered, a new set of tapering wings was released. These were called variants D and E. These variants were an outright success, with planes delivered to a large number of foreign countries, as well as the Netherlands' own air forces. Licenses were sold to a number of clients too. In March 1933, a final variant of the C.5E was released, called the C.5 'New Generation'. It featured aerodynamic refinements and a more powerful engine.

"During a period of eleven years, Fokker built 187 machines, of which 68 were for foreign countries. Another 723 aircraft were built under license, although in some cases, figures are a bit sketchy."

The Fokker C.5 in it various versions was sold and/or license manufactured in 14 countries, all of which are covered in this book in great detail. The following summary of the summaries lists the contents of each chapter by (pages, photos, color profiles):

**Bolivia** (8,8,1) In 1925 Bolivia ordered 5 C.5C. Considerable difficulties were encountered because of the high altitude and poor airfields, but one of the remaining aircraft shot down a Paraguayan Potez 25 during the Gran Chaco conflict. (See SAFO #137)).

**China** (4,5,1) One C.5E arrived in Manchuria before the Japanese conquest.

**Denmark** (28,63,5) Five C.5B were ordered in 1926. Two of these made a historic flight from Copenhagen to Tokyo and back. License-built versions served until the German invasion.

**Estonia** (6,7,1) The C.5 never flew in Estonian insignia, but ex-Danish machines in Luftwaffe insignia were used by Estonian pilots against the Soviets in WW2.

**Finland** (19,40,4) Finland made considerable use of the C.5 during the Winter War and the Continuation War.

**Hungary** (24,49,5) The clandestine Hungarian AF used armed C.5 as "airmail carriers". An improved version was built in Hungary as the WM.16 Budapest, which was soon replaced by a further C.5 development - the WM.21 Solyom which saw action on the Russian front.

**Italy** (27,59,5) Italy license built some 330 improved C.5 as the Ro.1. These served in Libya, Somalia, and Eritrea. They played a major role in the occupation of Abyssinia.

**Japan** (4,8,1) Japan acquired two C.5 for trials. One of these was sold to a Japanese newspaper company.

**Norway** (24,40,3) Norway's order for 5 C.5E was followed by a license to build improved versions. When Germany invaded Norway there were still 42 C.5 in the inventory. Four C.5 escaped to Sweden and two escaped to Finland.

**Romania** (2,3,0) A C.5E was demonstrated in Romania, but no orders were forthcoming.

**Soviet Union** (2,2,0) Two C.5 were sold to Russia, but no orders were forthcoming.

**USA** (4,10,1) A Fokker C.5, known as the Atlantic Aircraft Corporation A1 was tested at McCook Field in 1926, but found unacceptable. Two license-built aircraft served with US embassy in Italy during 1928-1934.

**Sweden** (26,56,5) Sweden was another big user of the C.5. In Sweden they were known as the S.6 (Reconnaissance) and J.3 (two-seat fighter). One of these planes crashed during an attempt to rescue the stranded crew of the airship *Italia* which crashed during an expedition to the North Pole.

**Switzerland** (17,40,4). After trials with several C.5 variants, the Swiss obtained a license to build the .5. Production lasted from 1926 to 1934. In all 63 C.5 were used by the Swiss Air Force. From 1937 onward they were replaced by EKW C-35. When WW2 started three Swiss units were equipped with 9 machines each. The final flight of a Swiss C.5 took place in 1958.

The Fokker C.5 is an historically important aircraft that served through the interwar period, into WW2, and beyond. In Lanasta's new book it finally gets the attention it deserves. Too bad the makers of plastic kits have not caught on to its importance. This book is available directly from the publisher.

## -books-books-books-books-books-books-books-books-books-books-books-books-books-




**Silver Swallows and Blue Bandits**: Air Battles over North Vietnam 1964-1975, by Istvan Toperczer. 256 A4 pages hardbound. Entirely in English. 340 photos, 33 color profiles, and 40 engagement maps. Published by Artipresse/frrom. 48 euros plus postage. E-mail: artipresse@yahoo.

The genesis of this amazing book is best explained by the author's Forward:

"In the two decades that have passed since the end of the air war in Vietnam a great number of books have been published, which focused mainly on the American side of the conflict. As such, the history of the North-Vietnamese pilots and planes did not receive proper publicity outside Vietnam. This is why I had decided to travel there and collect written and photo archives, and meanwhile meet pilots from 'the other side'.

"By the time of my arrival, more than ten years had passed since the introduction of the "*doi moi*", the Vietnamese glasnost, as a result of which I could collect a large amount of data, and the museums could also cater for my endless hunger for information. Several books presenting the Vietnamese army had been published and the captions of photos exhibited in the museums helped me collect data about air battles. The small information plates placed near the planes exhibited in the museum yards provided additional information about the air events. Although some of the pilots engaged in the air war had been still fulfilling their military service, I had been allowed to interview some of them, permission which was quite unusual for a foreigner in the first half of the 1990s. Nevertheless compiling the material for the book proved a difficult and exhaustive task.

"The turn of the century and of the millennium has brought significant changes in the historical accounts of the Vietnamese air force, as more publications appeared within the Vietnamese army about the history of air units, victories and losses in the air war. The maps of several air battles were available in museums and books. The Vietnamese pilots had retired and talked more openly about the events of the air war. There will always be differences in describing the dogfights between the Americans and the Vietnamese, but close knowledge of these dogfights from both perspectives definitely takes us closer to reality."

Now for my comments: As I was reading the first chapter, I became confused about the organization of the book. It starts with the first balloon and heavier-than-air flights in Vietnam, goes on to discuss the aircraft of the last Emperor of the Nguyen Dynasty, Bao Dai – a DH 82 Tiger Moth that is illustrated with a color profile - overall yellow with a yellow 5-pointed star on a red disc. Then suddenly I was reading about Vietnam pilots training in Russia on MiGs.

Then, the last section of the first chapter describes the first victory by the Vietnamese People's Air Force (VPAF). A pilot of the Royal Lao Air Force T-28 defected to North Vietnam in 1963 and his aircraft was incorporated into the VPAF. On 15 February 1964, Nguyen Van Ba, flying this ex-Lao T-28 shot down a SVAF C-123 over the Lao border. A color profile of this T-28 is included..

This brief summary of the first chapter reveals the organization of the remaining part of the book - a series of standalone chapters covering separate aspect of the air war over Vietnam. It also highlights the main weakness of the book – you're on your own to fill in the historic background. This said, the remaining chapters are a feast for the enthusiast.

The next three chapters (150 pages) deliver on the promise of the title, *Silver Swallows and Blue BanditsI*. Combat actions of MiG-17, MiG-19, and MiG-21 are discussed in great detail including "engagement maps" with an area map showing the tracks of the incoming enemy formations and of the intercepting force, the ensuing combat, and the track of the retiring enemy force.

This is followed by two short chapters: "Group Z" - North Korea's contribution to the air war, and "Airfields and Maintenance".

All this informative is worth the price of the book, but for those desiring more unusual information, the best is yet to come in a chapter titled "Bombers". Each subsections contains a detailed description from preparation to return to base, engagement map, and a color profile of one of the participating aircraft.

"The Old Lady's tour in Laos" On 12 January, 1968, four An-2 biplanes attacked the US TACAN center in Laos. Two of the An-2 were lost when they collided after the attack.

"Smoke on the Water" On 19 April 1972, off the coast of Vietnam, two MiG-17F bombed the USS Oklahoma City and USS Higbee seriously damaging the latter.

"Cave Canem: North Vietnamese Beagles." On 9 October, two Il-28, escorted by two MiG-21, attacked the LS32 base in Laos,

"War-loaned aircraft over Saigon" On 8 April 1975, an ex SVAF F-5E was used to attack the Presidential Palace in Saigon., and on 28 April 1975, an ex-SVAF A-37B attacked Tan Son Nhut AB.

This is an excellent book that contains much new information about the North Vietnamese Air Force, well-reproduce photos (both color and b&w), and fantastic color profiles. It is highly recommended for both the history enthusiast and the modeler looking for unusual color schemes for his next project. It is available directly from the publisher. However, be prepared to spend a lot of time on the Internet putting the engagements into historical content.

## -books-books-books-books-books-books-books-books-books-books-books-books-books-




**Lioré et Olivier LeO 45**, by José Fernandez and Patrick Laureau. French Wings #4. 80 A4 pages. 125 photos. 38 color profiles. Softbound. Entirely in English. Published by Stratus/Frrom. www.artipresse.com. 15€ plus postage – 3€ in Europe, 4€ rest of the world.

Between the wars, the French aviation industry was notorious for producing ugly bombers, but all this changed in the thirties when some of the most aesthetically pleasing bomber design began emerging for French drawing boards. Among these attractive designs was the Liore et Oliver Le45.

This book provides a detailed description of the development and service use of the LeO45. A list of the main chapters will give an idea of the breath of coverage and the extent of the illustrative content:

"Birth of the LeO45" 15 pages with a myriad of photos and technical drawings.

"Service entry during the Phoney War" 4 pages and 5 photos.

"First missions and the birth of Group 6' 7 pages, and 19 photos.

"The terrible months of May and June 1940" 19 pages, 19 photos, 10 color profiles, 2 color 2-views, and a color 3-view.

"The Vichy period" 10 pages, 14 photos, 2 color profiles, and a color 3-view.

"Operation Torch" 3 pages and 3 photos.

"The Syrian Campaign" 5 pages, 4 photos, and a color 3-view.

"With the Aeronavale"4 pages, 6 photos, and a color 3-view.

"In Allied colors" 3 pages, 2 photos (Free French), and a color 3-view (US).

"Under Axis colours" 4 pages, 5 photos, and a color 3-view.

The LeO45 was an attractive airplane that saw considerable action during WW2 in France, North Africa, and Syria. Entirely in English and at about $19 (with postage) it's a real bargain.




**Peruvian Aviation Corps Operations during the Putumayo Campaigb September 1932 – May 1933**, by Amaru Tincopa Gallegos. 60 A4 pages. Softbound. 140 photos. 20 color profiles. Entirely in English. Published by Artipresse. www.artipresse.com. 18€ plus postage - 3€ Europe, 4€ rest of world.

The story of this little-known conflict is summarized in the artipresse website:

"Over the green vastness of the South American jungle, Colombian and Peruvian Air Forces carried out numerous fighter, bombing, reconnaissance and transport missions in support of their respective ground and river based forces, …suffering numerous losses in the process, mostly because of the extremely difficult operational conditions imposed by the theatre of operations itself. Facing the prospect of losing overall air superiority due to rising attrition, both forces made substantial purchases to replenish their ranks, each aiming to reach a quantitative - as well as qualitative - edge over the other."

The text begins with a description of Peruvian military aviation at the beginning of the conflict - 7 Vought O2U-1E, 3 Douglas DT-2B, 5 Stearman C-3R, and such little-known types as the Keystone K-55 and Hamilton H-45. Colombia was in even worse shape with 1 Curtiss D-12 Falcon, 8 Wild WT34D, and 3 Curtiss J-2 Fledging. During the conflict, both sides increased their inventory with commandeered civil aircraft and major purchases from Curtiss (Hawk II), Douglas (O-38), and Vought (Corsair).

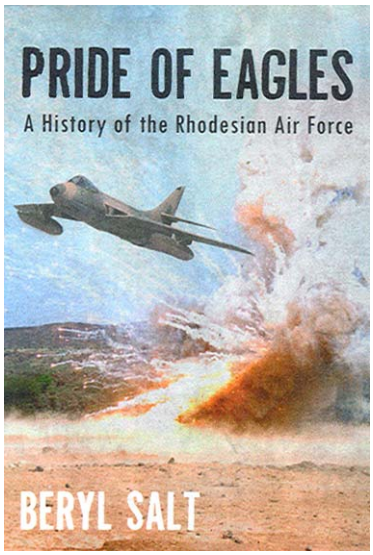
The main body of the text is a "Chronology of CAP operations in the Putumayo theater". This section is highlighted with vivid descriptions of aerial combat between Colombian float-equipped Hawk II and similarly equipped Peruvian O-38. An excellent map illustrates the disputed area at he headwaters of the Amazon River. A final section "Peruvian military aviation rearmament and re-equipment" describes the of many more exotic types such as the Ca.111, C.114, NiD123, Potez 390, & Fairey Fox.

The book is illustrated with 140 photos of aircraft of both sides including many civilian types seldom seen in military markings. The more familiar types are also illustrated by 20 color profiles: Colombia: Ju 52/3m (2); Curtiss Cyclone Falcon (4); Curtiss Hawk II; & Curtiss BT-32 Condor. Peru: Douglas O-38P, Curtiss Hawk II (2); Vought O2U-1E Corsair (4); Potez 391; Curtiss Cyclone Falcon; & Fairey Seal (2).

This book is highly recommended to both the military historian who will enjoy the description of conducting a military campaign in the most inhospitable terrain imaginable. The aviation enthusiast will enjoy the photos of familiar aircraft on floats and little-known aircraft in military markings. The modeler will find inspiration in the Hawk II on floats in Peruvian and Colombian markings.

The book is available from the publisher, and in English and at about $18 (including postage) it's a real bargain.

## -books-books-books-books-books-books-books-books-books-books-books-books-books-




**Pride Of Eagles**, by Beryl Salt. Paperback 6 inches by 9 inches (155 mm by 230 mm). 760 pages. Published by Helion. UK price £45.00

This is the history of the Rhodesian Air Force from the pioneering flights of the 1920s to 1980 when Southern Rhodesia became Zimbabwe.

There are 47 chapters which include references to every theatre of war in World War 2 involving Rhodesians: East Africa, North Africa, and the Mediterranean Theatres plus various activities in the UK. Rhodesian airmen and squadrons were everywhere.

Not forgotten is the vast amount of Air Training carried out in Rhodesia during and after the war when the Southern Rhodesian Air Force was formed as a citizens air force.

The Bush War fought after the Universal Declaration of Independence is well covered leading up to the final end of Rhodesia.

This review is only a basic preview as frankly I haven't found the time to read the deeply researched text which includes where possible personal memories, official documents lists of aircrew.

There is an excellent and comprehensive index - longer than some books I've seen!

There are several criticisms Although there is a plethora of excellent maps and many photographs from all theatres of operations, the photographs are reproduced several to a page making them difficult to interpret from the modellers point of view. To add a further criticism there are no lists of aircraft serials and tie ups. This doesn't bother me personally, but there are those who will feel this a problem.

Beryl Salt went to Rhodesia in 1952 where she worked as a broadcaster and journalist and had several books on her new country published. She worked for several years with the Ministry of Information and became a freelance writer until she left Rhodesia in 1980 returning eventually to the UK where she died in 2001 aged 70.

My criticisms aside, this looks to be an excellent guide to Rhodesian aviation and even at the price it seems a bargain and it will probably be the only game in town for a long time.

Malcolm Barratt (#1716), UK.

**Greeks in Foreign Cockpits**: The life and the career of Hellenic parentage fighter pilots in service with the USAAF and the RAF. 1940-1945, by Demetrios Vassilopoulos, Kyriakos Paloulian, and George Chalkiadopoulos. Hardcover: 330 pages (A4 Format). 435 photos with bilingual captions (Greek/English), 48 color profiles, 11 digital paintings, 4 paintings, Victories tables. Published by Eagle Aviation (July 2014). ISBN-13: 978-6188137608.

The combat history of the Royal Hellenic Air Force during WWII is not so well known as that of the other branches like the Greek Army and Navy. The stories of the many Greek parentage background pilots that served with the Allied Air Forces, RAF and USAAF remains completely undocumented albeit a few exceptions. This book documents for the first time in Greek bibliography the service record of ten fighter pilots who honored not only the country that they were born at, but also the birthplace of their ancestors, retaining full knowledge of their Greek background. The authors aim that this first volume is only the beginning of what would become a complete roll of honor, of all the heroes that remain unlisted from the modern history of Greece. Hopefully the service of these pilots would inspire the younger generations, and especially all the current and future Hellenic Air Force pilots.

## -letters-letters-letters-letters-letters-letters-letters-letters-letters-letters-letters-letters-letters-

"SAFO 154 came to the top rather quicker than usual, and I wanted to get off a few comments to you while the iron was hot.

"In Greg Kozak's 'Exotic Birds 4', the Guyana Defence Force U-10A did not, unfortunately, have any US military connection whatsoever, and was not a U-10A. Guyana acquired three commercial H.295s between April and October 1967 and the last of these served until about January 1983.

"Captain Jorge Delgado's fine drawing of the single Trinidad and Tobago Cessna on page 66 shows the single Model 337A acquired in June 1966. I was not aware of a second 337 noted on page 70, as TTDF-1 was formerly N5341S! Thus, I am pretty sure there was only one. TTDF-1 apparently had two (or three?) color national color bands on the extremities of each upper wing, assumed to have been blue, white and red, like the rudder stripes.

"On page 69, I was dismayed to see the announcement of the Antarqui Decals for Brazilian Boeing 'P-12E & F4B-4.' This is of course totally incorrect. Brazil acquired a total of 14 Boeing Model 256's (nine for the Army and six for the Navy) and the actual Boeing specification stated that 'this model was the export version of the F4B-4 except that the flotation gear, arresting gear and radio mast were removed. There were also some other differences. Brazil also acquired nine Boeing Model 267, which were definitely not 'P-12E'. The 256 of what was essentially a Model 235 (F4B-3) fuselage and landing gear and Model 234 (P-12E) type wings. They were also substantially lighter than the 256, which were regarded by the Brazilians as too heavy. There were some other differences as well."

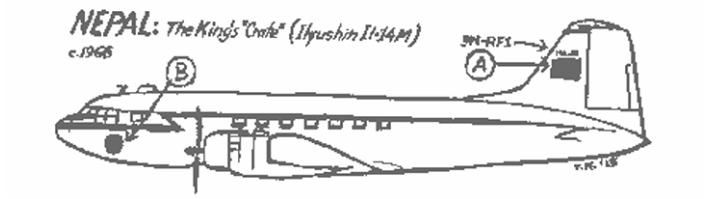
Dan Hagedorn (#394), USA.

## -letters-letters-letters-letters-letters-letters-letters-letters-letters-letters-letters-letters-

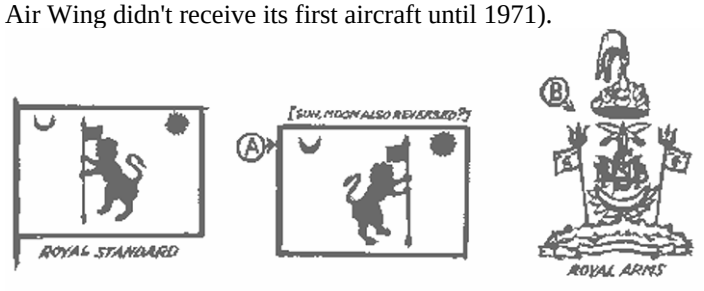
"As usual, #154 was another outstanding edition of SAFO. I found the answer to Malcom Barratt's question about the Indonesian aircraft. It is the prototype of the LIPNUR NU-200 Sikumbang, the second powered aircraft in the Republic of Indonesia. It was apparently intended as a general purpose close-support aircraft, but it was never put into production. See attached image from aviadejavu.ru, and more info at well: http://aviadejavu.ru/Site/Crafts/Craft31401.htm."




"In SAFO No. 153 (July, 2015), Greg Kozak's 'Exotic Birds' presented an unusual Ilyushin Il-14 (NATO code-name 'Crate') in Nepal. From the rather unclear markings, it seemed to be the King of Nepal's personal aircraft. Further digging confirmed that supposition, as shown by the rough sketches below.




"The Soviet Russian Government presented this aircraft to King Mahendra (reigned 1956-1972) at a time when Nepal had no military air arm, to form the Royal Flight, which was subsequently supplemented by two Scottish Aviation Twin Pioneers. The King's 'Crate' was coded 9N-RF1 (in red) on the fin above the Royal Flag or Standard and carried the Royal Arms on the nose. (The Twin Pioneers bore the ordinary double-triangle national flag of Nepal, as did all the Royal Nepal Airlines planes since 1958 founding. The Royal Nepalese Army Air Wing didn't receive its first aircraft until 1971).




"Also enclosed is a photo of Trinidad and Tobago Defence Force's Cessna 337 that was the subject of Jorge Delgado's drawing in SAFO #154. Coded TTDF-1, it was in service from 1966 to 1972. Note the TTDF badge on the nose, and the red-white-black rudder striping. Both the upper and lower wings also feature the same striping, chord-wise at the wing tips. Image from unknown internet source.
Greg Kozak (#1599), USA.




"(A.) Old flag references show the Royal Flag as a red horizontal rectangle displaying a rampant lion holding a flagstaff or lance with a rectangular flag. In the upper corners are a crescent moon and a stylized sun featuring a face. All these elements are in white with red or black line details. (An earlier version had these same elements on a vertical rectangle.) Oddly, though the lion faces left in the design, the 'Crate' photo seems to show it facing right, toward the trailing edge of the fin. An explanation may be shown on the Royal Arms, which here appears enclosed in a roundel on the nose.

"(B.) The Royal Arms, which is almost as complicated as the National Arms, has the King's Crown, plumed, above crossed kukris and a lance-point, above the intertwined monogram of the King's full name, "M.B.B.S.D." (in roman letters, not in Nepalese alphabet), above a crescent moon, above mountain ranges, above a scroll, all with further small elements scattered throughout. This is flanked by two tridents, each flying the Royal Flag in opposite directions. A close examination shows the lion facing left on the left one and right on the right one. On the Il-14M tail the port side has the lion similarly facing right, and we may thus assume that it is facing left on the starboard side, as the flag is officially depicted.

"One reference dates the Royal Flag as in use from 1960 to 2008. I'm guessing the photo shown by Greg was taken around 1966. The Royal Flight had added more aircraft, fixed-wing and rotary, with the 9N-RF... numbers going up to at least 10 (a C-47). With the end of the monarchy, the unit became the VIP Flight."
Ted Koppel (#118) USA.




Planes at the Escuela de Aviación Militar after 1944. They were the main basic trainers until they were replaced by the Percival Prentice.




Ee-126 received serial in 1944, but in 1945 it was assigned the civil serial LV-XDY. However, it remained at the Escuela de Aviación Militar until 1950. Archive Dirección de Estudios Históricos de la Fuerza Aérea Argentina.




After being rebuilt, c/n 29 was transferred to the Dirección General de Aeronáutica Civil in late 1944, before the Ministerio de Aeronáutica and the Argentine Air Force were created in January 1945. It's equipped with a Warner Super Scarab engine. Archive Santiago Rivas.




LV-YZM at Coventry on 20 August 1955 when Santiago Germanó took the plane to the Lockheed International Aerobatic Competition of the British National Air Races at Bagington. Archive RAScholefield



One of the Fw-44J operated by the Argentine Navy. Archive Instituto Aeronaval. destroyed in an accident on 1962 and rebuilt. Photo Santiago Rivas.



LV-UCC, which received its civil serial in 1938. It was later transferred to the Military Aviation and became Ee-36. In 1944, it returned to civil status and in 1945 became LV-XDG. Finally in 1953 was re-serialled LV-YZR. Archive Francisco Halbritter.



LV-YZW, property of the Dirección General de Aeronáutica Civil and delivered to the Aeroclub Bariloche in 1953. It's the former Ee-128 of the Argentina Army Aviation and Air Force (since 1945). Archive Francisco Halbritter.



Ee-182 is now preserved at the Museo Nacional de Aeronáutica with the fake serial Ee-122. Still in flyable conditions, it has not been flown since the nineties. Photo Revista Aeroespacio.




LV-YZN in 2006 at Buenos Aires Domestic Airport for the centenary of the first flight of an Argentine balloon. The plane is still in flying condition. Photo Santiago Rivas




LV-YZN in 2006. Photo Santiago Rivas.




LV-YZN in 2006. Photo Santiago Rivas.




LV-YZN today. The plane was delivered to the Argentine Army Aviation. Assigned to BAM Coronel Pringles and in 1943 to the Escuela de Pilotos Militares at the same base, but it was stored. It was transferred to the Escuela de Aviación Militar in 1945 and to the Dirección de Aeronáutica Civil in 1947, re-serialled LV-YZN. It was